2020

Predictors of Resilience in Collegiate Student-Athletes

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PREDICTORS OF RESILIENCE IN COLLEGIATE STUDENT-ATHLETES

A Masters Thesis presented to the Faculty of the
Graduate Program in Exercise and Sport Sciences
Ithaca College

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In partial fulfillment of the requirements for the degree
Master of Science

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by

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October 2020

Ithaca College
School of Health Sciences and Human Performance
Ithaca, New York

CERTIFICATE OF APPROVAL

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MASTER OF SCIENCE THESIS

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This is to certify that the Thesis of

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ACKNOWLEDGEMENTS

I would first like to thank the coaches that saw the value in my project, and the student-athletes that took time out of their busy schedules to participate. This year was full of challenging surprises, and you all still took the time to prioritize my research. This project would not have been possible without your contribution.

To my advisor, Dr. Vosloo, thank you for continuously challenging me to be better every day. You taught me how to break down my own barriers and live every day with empathy. Thank you for absolutely everything.

Dr. Harenberg, somehow you always made time to help me out, even when it was difficult. Your commitment to your students does not go unnoticed and I will always be grateful for everything you did for me throughout this experience.

To my momma, I could not have done this without you. You have always been a consistent light in my life and I want nothing more than to make you proud. Thank you for always supporting my every move. I love you.

To my very first friend at Ithaca, I have no idea how I would have gotten through the last two years without you. You are one of the most resilient people I have ever met and you inspire me every day. Thank you for always being there for me. Thank you for being my friend, Rachy.

And of course, my Tyler. You have always been my rock. You bring out the very best in me as a person and as a student. You have taught me to believe in myself and constantly remind me you will always be right by my side. No matter how hard it gets. I love you.

DEDICATION

This master's thesis is dedicated to all of the student-athletes working through their stressors every single day. You are stronger than you know.

ABSTRACT

Resilience in sport is defined as "the role of mental processes and behavior in promoting personal assets and protecting an individual from the potential negative effects of stressors" (Fletcher & Sarkar, 2012, p. 675). In order for an individual to display resilience, the individual must experience adversity and then positively adapt as a result. Fletcher and Sarkar's (2012) grounded theory approach of psychological resilience in Olympic champions concludes that as an individual encounters stressors, a positive personality is one of five psychological characteristics that influence challenge appraisal, resulting in facilitative responses (i.e., resilience). Two of the positive personality traits highlighted in sport resilience literature are optimism and hardiness. However, quantitative research exploring stressors, challenge appraisal, and personality characteristics (i.e., optimism, hardiness) as predictors of resilience in sport is limited. Therefore, the purpose of this study is to examine the relationships between stressors, challenge appraisal, and personality characteristics (i.e., optimism, hardiness) with resilience in collegiate student-athletes. It was hypothesized that 1) stressors; 2) challenge appraisal; and 3) personality characteristics would predict resilience in student-athletes.

A sample of 138 intercollegiate student-athlete participants (male $n = 78$; female $n = 58$; transgender $n = 1$; non-binary $n = 1$; $Mean_{Age} = 19.9$, $SD_{Age} = 1.17$) completed the Collegiate Student Athlete Life Stress Scale (Lu et al., 2012), Adverse Childhood Experiences Questionnaire (Felitti et al., 1998), Challenge and Threat in Sport Scale (Rossato et al., 2018), Life Orientation Test-Revised (Scheier et al., 1994), Dispositional Resilience Scale-15 (Bartone, 2007), and the Connor-Davidson Resilience Scale-10 (Campbell-Sills & Stein, 2007). Guided by Fletcher and Sarkar's (2012) model, a

multiple hierarchical regression analysis was conducted utilizing the various psychological and demographic variables. Results revealed that the appraisal of stressors as challenges and opportunities for growth and mastery, rather than threatening, added to the prediction of resilience in collegiate student-athletes. Results also revealed the commitment dimension of hardiness added to the prediction of resilience in collegiate student-athletes. Overall, 42% of the variance associated with the resilience variable was predicted by the stressors, challenge appraisal, and personality characteristics variables examined in the present study.

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INTRODUCTION

The importance of physical ability and athleticism are critical in one's athletic success. However, various athletes of all abilities have reported that the mental side of sport has been an extremely valuable component within their skill set that allows them to reach their full potential (Butt et al., 2010). The competitive sport environment is a unique context in which individuals operate in demanding situations at various intensities, and student-athletes must utilize and optimize a range of mental skills to withstand such pressures (Fletcher & Sarkar, 2012; Gould et al., 2002). Some student-athletes are able to overcome those demanding situations in life and sport, whereas others are not. The study of psychological resilience explores the reasons why some individuals are able to endure, or even thrive on, those situations (Fletcher & Sarkar, 2013).

Resilient, resilience, and resiliency are terms often used by coaches and the media to describe athletes that are able to endure, or even thrive on, the demanding situations they encounter (Galli & Vealey, 2008). The definition of resilience commonly used within the context of sport is "the role of mental processes and behavior in promoting personal assets and protecting an individual from the potential negative effect of stressors" (Fletcher & Sarkar, 2012, p. 675). This definition conceptualizes resilience as a trait as well as a process. The "mental processes and behavior" component of the definition refers to the trait concept of resilience, and "the role" of those refers to the process concept of resilience (Fletcher & Sarkar, 2012, 2013). In order for resilience to

be demonstrated, two key components must be present: adversity and positive adaptation (Fletcher & Sarkar, 2013).

Adversity encompasses negative life circumstances that are known to be statistically associated with adjustment difficulties (Luthar & Cicchetti, 2000). In sport psychology research, to encompass all adverse experiences, regardless of the amount or severity, the term "stressors" is used. Stressors are "the environmental demands (i.e., stimuli) encountered by an individual" (Fletcher et al., 2006, p. 359). Collegiate student-athletes have particular life circumstances compared to those who are non-athletes (Lu et al., 2012). For a student-athlete, stressors are associated with personal "non-sporting" factors, competition within their sport, and the organization in which they compete. Student-athletes are likely experiencing multiple stressors at once, yet are expected to cope appropriately, or positively adapt, to maintain high performance (Sarkar & Fletcher, 2014). Positive adaptation is when one adapts substantially better than what would be expected given the severity of the circumstances (Luthar & Zelazo, 2003). Positive adaptation is influenced by protective factors, which are defined as "influences that modify, ameliorate, or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome" (Rutter, 1985, p. 600). Extraversion and conscientiousness (Campbell-Sills et al., 2006), hope and social support (Horton & Wallander, 2001), self-efficacy (Gu & Day, 2007), hardiness (Bonanno, 2004), and enhanced attributional style (Kleiman et al., 2013) are examples of protective factors that have been identified in resilient adults.

Children who have experienced adversity in the form of abuse, household challenges, and/or neglect are known to have had adverse childhood experiences, or

ACEs (Centers for Disease Control and Prevention [CDC], 2019; Felitti et al., 1998). ACEs are also referred to as stressors, considering each experience in this realm was an environmental stimulus encountered by an individual. Researchers explored children who have been able to positively adapt to these experiences and found that having a supportive environment inside and outside of the house, a good self-esteem, and an easy temperament served as protective factors for these children (Garmezy, 1991; Rutter, 1990; Werner & Smith, 1992). In addition, females who are interpersonally skilled, competent in various areas of life, have a high self-regard, participate in spiritual and/or religious activities, and have helpful life circumstances allow them to positively adapt after experiencing sexual abuse as a child (Bogar & Hulse-Killacky, 2006). ACEs have been found to heavily correlate with long term, negative effects on health, opportunity, and well-being through adulthood, more specifically, chronic health diseases, substance misuse, and mental illness (CDC, 2019; Felitti et al., 1998).

A theory that has been frequently discussed in various contexts of resiliency literature is known as The Resiliency Theory and its accompanying model (Richardson et al., 1990). This model states that when individuals encountered adversity, it interrupts their biopsychospiritual homeostasis and if the individual does not have sufficient protective factors, it will lead to disorganization. Following disorganization, individuals reintegrate in one of four ways: dysfunctionally, maladaptively, homeostatically, or resiliently. Various envirosocial processes occur throughout this process and serve as buffers. The limitations of this model were considered in the development of Galli and Vealey's (2008) Conceptual Model of Sport Resilience. This model gathered a better understanding of resilience as a process and concluded how the process of resilience

works in sport, the factors that influence one's response to adversity, and how experiencing adversity contributed to helping athletes become resilient. Both The Resiliency Theory (Richardson et al., 1990) and The Conceptual Model of Sport Resilience (Galli & Vealey, 2008) supported the fact that although athletes experience negative psychological effects following adversity, they may also gain protective factors in the process and ultimately grow from the experience allowing them to positively adapt to adversity more effectively in the future.

To assess the limitations within Galli and Vealey's (2008) findings, a grounded theory approach was employed by Fletcher and Sarkar (2012) on the responses from successful gold medal Olympians. This approach concluded five psychological experiences relating to a positive personality, motivation, confidence, focus, and perceived social support were all significant in promoting a facilitative response for athletes. These factors served as protective factors from the potentially negative consequences of facing stressors by positively influencing their challenge appraisal and meta-cognitions (Galli & Gonzalez, 2015). These cognitive reactions produced ideal facilitative responses, ultimately resulting in optimal sport performance (Fletcher & Sarkar, 2012; Galli & Gonzalez, 2015).

One specific component of Fletcher and Sarkar's (2012) grounded theory was the role of a positive personality as a protective factor. Positive personality characteristics were one of the five psychological factors determined to have an impact on the challenge appraisal of Olympic champions and ultimately lead to facilitative responses (i.e., resilience). However, these conclusions, in addition to the conclusions from Galli and Vealey's (2008) Conceptual Model of Resilience in Sport were all determined

qualitatively through the process of interview transcription. There was no existing quantitative literature investigating the impact stressors had on resilience in sport for collegiate athletes. There was also no existing quantitative literature on the impact of specific personality characteristics (i.e., optimism, hardiness) and challenge appraisal on resilience in sport. Hence, the purpose of the present study was to examine the relationship between stressors, challenge appraisal, and personality characteristics with resilience in collegiate student-athletes.

Statement of Purpose

The purpose of this study was to:

1. Examine the relationship between stressors and resilience in collegiate student-athletes.
2. Examine the relationship between challenge appraisal and resilience in collegiate student-athletes.
3. Examine the relationship between personality characteristics (i.e., optimism, hardiness) and resilience in collegiate student-athletes.

Research Questions

The research questions for this study were:

1. Can stressors predict resilience in collegiate student-athletes?
2. Can challenge appraisal add to the prediction of resilience in collegiate student-athletes?
3. Do other personality characteristics add to the prediction of resilience in collegiate student-athletes?

Hypotheses

The hypotheses for this study were:

1. Stressors will be associated with significantly higher scores of resilience in collegiate student-athletes.

2. Challenge appraisal will add to the prediction of resilience in collegiate student-athletes.

3. The personality characteristics of optimism and hardiness will add to the prediction of resilience in collegiate student-athletes.

Assumptions of the Study

For the purpose of this study, the following assumptions were made at the start of the investigation:

1. The sample was representative of an intercollegiate population.

2. Participants were representative of the measures of stressors, challenge appraisal, and personality characteristics (i.e., optimism, hardiness) with resilience in collegiate student-athletes.

3. The scales accurately assessed the participants' self-reported stressors, challenge appraisal, personality characteristics (i.e., optimism, hardiness), and resilience in sport.

4. Participants answered the questionnaires truthfully and accurately to the best of their ability.

Definition of Key Terms

The following terms were defined for the purpose of this study:

1. Resilience: The role of mental processes and behavior in promoting personal assets and protecting an individual from the potential negative effects of stressors (Fletcher & Sarkar, 2012, p. 675).

2. Adversity: The term encompassing negative life circumstances that are known to be statistically associated with adjustment difficulties (Luthar & Cicchetti 2000, p. 858)

3. Stressor: The environmental stimuli encountered by an individual (Fletcher et al., 2006, p. 359). For an athlete, stressors are associated with competition, the organization, and personal factors outside of sport.

4. Adverse Childhood Experience (ACE): Event(s) a child experiences in the form of abuse, household challenges, and/or neglect before their eighteenth birthday (CDC, 2019; Felitti et al., 1998).

5. Positive Adaptation: Adaptation that is substantially better than what would be expected given exposure to the risk circumstance being studied (Luthar & Zelazo, 2003, p. 515).

6.. Protective Factors: Influences that modify, ameliorate, or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome (Rutter, 1985, p. 600).

7. Challenge Appraisal: Occurs when an athlete views an event or circumstance as something that is relevant to the achievement of their goals, and believe they have the means to handle those demands (Lazarus & Folkman, 1984).

8. Optimism: The tendency to believe that one will generally experience a good outcome in life (Lee et al., 2008, p. 417).

9. Hardiness: A combination of the three personality dispositions of commitment, control, and challenge that function together (Kobasa et al., 1982).

Delimitations

The delimitations of the study were as follows:

1. This study assesses the predictors of resilience in sport from a quantitative perspective.

2. Surveys were anonymously administered electronically via Qualtrics in order to reduce the risk of emotional distress.

3. The Challenge and Threat in Sport Scale (CAT-Sport; Rossato et al., 2018) is a very new scale, but was chosen to assess challenge appraisal for this study.

4. This study primarily focused on the positive personality characteristics of optimism and hardiness. Other positive personality characteristics as predictors of resilience were not included.

5. Other psychological factors besides positive personality characteristics were not included.

6. Participants were only being sampled from Division III schools in the Northeast region of the United States.

Limitations

The limitations of the study were as follows:

1. To date, there is no sport-specific scale to measure resilience in sport.

2. Psychological predictors of resilience in sport, such as motivation, confidence, focus, and perceived social support (Fletcher & Sarkar, 2012) not incorporated into the scope of this study may have had an impact on one's resilience.

3. Socio-cultural and environmental factors not incorporated into the scope of this study may have had an impact on one's resilience.

4. Race/ethnicity of participants was not collected, which restricted generalizability.

5. The nature of this study was self-reported, running the risk for social desirability bias.

6. Data collection for this study took place electronically during a global pandemic, which potentially impacted the response rate.

7. Measurement fatigue may be relevant in the present study due to the length of the survey.

PROPOSAL

REVIEW OF LITERATURE

Introduction

Sport performers in athletic settings unavoidably endure significant adversity, stressors, and failures, both physically and psychologically (Galli & Gonzalez, 2015). An example of experiencing the ups and downs of elite competition are represented when reflecting back on American swimmer Pablo Morales' Olympic career and North Carolina State's Track superstar Kathy Love Ormsby's college career. Morales participated and won three medals in the 1984 Olympic games in Los Angeles, but failed to win a fourth, as he was upset in the 100-meter butterfly final. When the next Olympic games approached four years later in 1988, Morales failed to make the team, and retired shortly after. However, Morales came back out of retirement to make the U.S. Olympic team and compete in the 1992 Olympic games in Barcelona. He went on to win a gold medal for the 100-meter butterfly. Kathy Love Ormsby was favored to win the 10,000-meter race at the NCAA track meet in 1986. However, she failed to maintain her pace and fell to fourth place with less than nine laps left in the championship race. Ormsby ran off in the middle of the race from the track, beyond the stands and disappeared. She was later found underneath a bridge. She jumped off in an attempt to end her life (Mummery et al., 2004).

These two stories are examples of two elite athletes in situations within their athletic environments that lead to two extremely different responses. Pablo Morales was able to bounce back from his failure, while Kathy Love Ormsby felt her failure was too much to live through. It is clear that failure can be motivating or disruptive depending on

how an individual perceives their circumstances. Resilience has been a primary factor that is considered when examining the differences between these individuals (Anthony, 1987; Mummery et al., 2004).

Resilience

Individuals encounter potentially stressful events, situations, and challenges throughout their lifetime. From everyday struggles to major life events, each person responds and adapts to circumstances in their own way. Resilience is considered an extremely valuable phenomenon for determining how individuals have been able to overcome these various difficulties throughout their lifetimes, and positively adapt moving forward (Morgan et al., 2013). It serves as a moderator variable that provides an understanding for why one individual may experience a variety of negative symptoms after experiencing an objectively minor event when another individual may not experience any negative symptoms at all after facing apparent extreme distress (Mummery et al., 2004). Throughout the last half of a century, there has been an increase in research conceptualizing resilience as a trait or as a process. Research on resilience as a trait refers to the identification of characteristics within individuals that allow them to be resilient (Fletcher & Sarkar, 2012), whereas research on resilience as a process is based off of the understanding that resilience develops over time in the context of person-environment interactions (Egeland et al., 1993; Fletcher & Sarkar, 2012).

Rutter (1987) defined resilience as the "positive role of individual differences in people's response to stress and adversity" (p. 316) and Flach (1988) defined resiliency as "the psychological and biological strengths required to successfully master change" (p. xi). Both definitions include trait characteristics of individuals that protect them from the

potential negative effects of stressors and allow them to be resilient, also referred to as protective factors (Fletcher & Sarkar, 2013). However, the conceptualization of resilience as a process notes that the impact of such protective factors varies contextually and temporally. As resilience research progressed, Luther and colleagues (2000) referred to resilience as "a dynamic process encompassing positive adaptation within the context of significant adversity," (p. 543) highlighting the fact that resilience changes over time. Thus, if an individual responded favorably to a stressor in one situation, it does not mean they will respond favorably to a stressor in another situation at another time (Fletcher & Sarkar, 2013).

Building on the different conceptualizations of resilience, Richardson (2002) divided resilience research into three "waves." The first wave is the study of the resilient characteristics (i.e., protective factors) of individuals and their environment that predict success when faced with adversity (trait resilience). The second wave is the study of the resiliency process, which is the process of coping with adversity, in order to determine and enhance the protective factors of individuals (process resilience). The third wave is the study of innate resilience, which serves as a method to discover and apply motivational forces that drive an individual to resiliently reintegrate (Richardson, 2002).

In most recent literature, Fletcher and Sarkar (2012) defined psychological resilience as "the role of mental processes and behavior in promoting personal assets and protecting an individual from the potential negative effects of stressors" (p. 675). This definition includes both the trait (first wave) and process (second wave) conceptualizations of resilience, with the concept of trait resilience being the "mental processes and behavior" that allow individuals to respond favorably (i.e., protective

factors), and the concept of process resilience being "the role" those protective factors have towards its development over time through the interactions individuals encounter with other people and within their environment (Fletcher & Sarkar, 2012, 2013; Egeland et al., 1993). Therefore, this is the most commonly referenced and emphasized definition used in the context of sports.

Resilient, resilience, and resiliency are terms used by sport professionals to describe athletes that responded favorably when faced with such adversity in their sporting environment (Galli & Vealey, 2008). Athletes must utilize a range of mental skills to withstand the demands they experienced and sustain high performance. Developing resilience, that is, having the ability to adapt positively to adversity, has been considered an essential skill to possess on the pathway to success in order to sustain such high performance (Hill et al., 2018). The two core components of resilience are exposure to significant adversity and positive adaptation (Fletcher & Sarkar, 2013). In order to understand how athletes positively adapt, their adverse experiences are predominantly considered (Sarkar & Fletcher, 2013).

Adversity

Adversity encompasses negative circumstances that are typically associated with statistically relevant negative consequences, such as adjustment difficulties. Adversity occurs and exists on a spectrum of relevance in the sport competition context, ranging from the fast-paced and immediately relevant changes that occur (e.g., an anterior cruciate ligament tear, death of a teammate; Brown et al., 2015), to the slower paced, but still potentially challenging changes in an athletes' social surroundings (e.g., losing a point in a match, changes in the weather; Fletcher & Sarkar, 2016). Adversity can exist as

one single event or several more commonly experienced events that each have an impact (Luthar & Cicchetti, 2000; Sarkar & Fletcher, 2014). This is highly relevant in a sport context, considering athletes may struggle with everyday life hassles, such as relationship problems, academics, and/or work responsibilities that have the potential to carry over into their sporting lives (Sarkar & Fletcher, 2014). To encompass both the everyday hassles as a collegiate student-athlete as well as the more significant life events, a more neutral term "stressor" is used in sport psychology literature.

A stressor is defined as "the environmental stimuli encountered by an individual" and for athletes, are associated with personal "non-sporting" factors outside of sport, sport competition, and the organization in which the athlete competes (Fletcher et al., 2006, p. 359). Personal stressors are those experienced in relation to personal "non-sporting" events that take place in an athlete's life (Sarkar & Fletcher, 2014). Within this category, three primary stressors are identified: work-life balance, family issues, and the death of a significant other. In sport psychology research, work-life balance has repeatedly been identified as a stressor (Gould et al., 1993). Athletes in the early stages of their careers struggle with balancing academics and/or personal relationships with their sport (McKay et al., 2008). Athletes in the later stages of their career struggle balancing their sport with their work commitments, as well as their personal relationships with their job (Noblet & Gifford, 2002). Family issues, more specifically, include the pressures to provide for the family financially (Thelwell et al., 2007), problems within personal relationships (Gould et al., 1993), family responsibilities (Weston et al., 2009), and an unstable home life (Scanlan et al., 1991). Lastly, the unfortunate death of a significant

other such as a family member (McKay et al., 2008) or a teammate (Scanlan et al., 1991) has been found to have a drastic impact on an athlete (Sarkar & Fletcher, 2014).

Competitive stressors are those experienced in relation to competitive performance. Based on a collection of sport research (Gould et al., 1993; Holt & Hogg, 2002; James & Collins, 1997; Hanton et al., 2005; Mellalieu et al., 2009; Neil et al., 2011), the most common competitive stressors include preparation, injury, pressure, underperforming, expectations, self-presentation, and rivalry. Organizational stressors are those experienced in relation to the organization in which the individual is involved (Fletcher et al., 2006). Arnold and Fletcher (2012) analyzed 1,809 participants from 34 studies using a meta-interpretation method and yielded 640 distinct organizational stressors experienced by athletes. Four categories were identified: leadership and personal issues (e.g., coaches personality and interactions, media), cultural and team issues (e.g., teammates personality and interactions, cultural norms), logistical and environmental issues (e.g., selection, facilities and equipment), and performance and personal issues (e.g., injuries, finances; Arnold & Fletcher, 2012).

Understanding psychological resilience includes the awareness of stressors athletes encounter every day, and those who are able to positively adapt to adversity are labeled as resilient. It is also important to consider that athletes are likely experiencing multiple stressors at once, yet are expected to cope appropriately, or positively adapt, to maintain high performance (Sarkar & Fletcher, 2014).

Positive Adaptation

As the identification of the stressors leading to adversity became increasingly understood, psychology research shifted its focus towards identifying the factors that

influence appropriate adaptation (i.e., positive adaptation). Positive adaptation has been defined by Luthar and Zelazo (2003) as "[adaptation] that . . . is substantially better than what would be expected given exposure to the risk circumstance being studied" (p. 515). The factors that influence positive adaptation in individuals are known as protective factors. Rutter (1985) defines protective factors as "influences that modify, ameliorate, or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome" (p. 600). In general psychology literature, resilience studied in regards to protective factors concludes that extraversion and conscientiousness (Campbell-Sills et al., 2006), hope and social support (Horton & Wallander, 2001), self-efficacy (Gu & Day, 2007), hardiness (Bonanno, 2004), and enhanced attributional style (Kleiman et al., 2013) have all been identified to have a strong positive relationship with resiliency in adults. In addition, being creative, having the ability to tolerate pain, personal insight, independence of spirit, the ability to restore self-esteem, and freedom to depend on others (within limits) were all concluded to be necessary characteristics in order to positively adapt (Flach, 1988). Taking it one step further, studies have sampled populations that are considered "at risk" to psychological distress, such as young children, adults, and families that have experienced and overcome adversity.

Children living in poverty and with parents that have a mental illness are populations considered to have experienced such adversity. These are two examples of adverse childhood experiences, or ACEs (CDC, 2019). ACEs are events that happen within the first 18 years of an individual's life that are potentially traumatic and lead to long term, negative effects on health, opportunity, and well-being through adulthood (Felitti et al., 1998). More specifically, ACEs have been linked to chronic health diseases

(e.g., cancer, diabetes, stroke), substance misuse, and mental illness (e.g., depression, suicide attempts) later on in life (CDC, 2019). The more ACEs one has, the greater the risk one has of having health related issues later on in adulthood. The unfortunate truth is how common ACEs are. Nearly two-thirds of study participants reported one or more ACEs, and more than one in five reported three or more ACEs (Felitti et al., 1998; CDC, 2019). However, researchers have investigated those who were able to overcome these adverse experiences and found that having a supportive environment inside (e.g., grandparent) and outside (e.g., teacher) of the family allowed them to more positively adapt. Decent planning skills, an easy temperament, and good self-esteem were also found to be resilient determinants, or protective factors (Garmezy, 1991; Rutter, 1990; Werner & Smith,1992). In addition, researchers that observed children in a longitudinal study in Kauai concluded that creating a sense of pride for one's self was a protective factor in elementary children. Other children that were resilient were achievement-oriented, independent, experienced life-satisfaction, and spent considerable time and energy caring for others (Werner, 1982). These protective factors proved to influence appropriate coping responses for these children. Personal competence and determination were the two primary responses as their most effective way to cope with adversity in their lives (Werner, 1982). To support this point, Bandura (1989) studied resilience and self-efficacy in youth. It was concluded that those who did not believe they could accomplish a challenge when the opportunity presented itself will not ever attempt to try it. Their low self-efficacy and decreased belief in themselves resulted in avoiding the task altogether as their way to cope with adversity.

Another example of an adverse childhood experience is sexual abuse (CDC, 2019). Women who have experienced sexual abuse during their childhood were interviewed as adults about their experiences and what it was like overcoming their trauma. Five resilient determinants were identified: (1) interpersonally skilled, meaning they had the ability to efficiently and positively interact with others; (2) competent in various areas of their lives (e.g., school); (3) had a high self-regard (e.g., positive outlook on life, feelings of worthiness); (4) participated in religious or spiritual practices (e.g., church); and (5) had helpful life circumstances, such as being able to avoid the abuser (Bogar & Hulse-Killacky, 2006).

Families in which a family member has died have also been considered a population that has experienced adversity. A study interviewing families in which a parent has died identified positive personality characteristics such as optimism and self-dependence as individual family member protective factors that influenced positive adaptation. These positive personality characteristics further allow them to help their fellow family members recover. Emotional and practical intrafamilial support from extended family and friends was identified as the most important resource influencing effective coping, encompassing the family's ability to work together and depend on each other. The strength and durability of a family as a whole (i.e., family's hardiness) was also identified as a protective factor (Greeff & Human, 2004). Lastly, involvement in religious and spiritual activities were highlighted considerations within this study. Research emphasized how helpful it was for individuals grieving to understand and positively adapt to adverse experiences through religious and/or spiritual means (Angell et al., 1998; Greeff & Human, 2004).

The findings from this previous literature were derived from individuals who experienced adversity involuntarily. Therefore, the results from previous research may not be generalizable to sport performers, who primarily participate in athletics voluntarily and fully aware of the high demands within the sporting environment (Sarkar & Fletcher, 2014). In addition, the impact ACEs have on student-athletes specifically has not yet been considered. Resilience is best understood in the context of the specific domains being studied and because competitive sport is relatively unique, it is necessary to explore the relevance of these findings to sport performers (Galli & Gonzalez, 2015). However, there is one theory that has been frequently discussed in resiliency literature due to its applied potential across a variety of stressors (Fletcher & Sarkar, 2013). This theory and accompanying model are The Resiliency Theory (Richardson et al., 1990; Richardson, 2002).

The Resiliency Theory

Richardson and colleagues (1990) summarized resiliency as an opportunity for personal growth and to build skills that will allow an individual to be resilient in various life experiences after facing repetitive adversity. The Resiliency Theory explained that people encounter stressors, life events, and challenges that disrupt their own biopsychospiritual homeostasis (i.e., a biological, psychological, and spiritual balance) and if the individual does not have sufficient biopsychospiritual protective factors, it would lead to disorganization. Disorganization is an individual's temporary state of biopsychospiritual disruption when they encounter a challenge or situation they have no ideas for how to deal with it. Examples of biological protective factors are tolerance for pain, healing capabilities, and fitness levels, and can be enhanced with proper rest,

adequate exercise, good nutrition, and avoiding harmful substances (e.g., alcohol, illegal drugs). Examples of psychospiritual protective factors mentioned as beneficial are good self esteem, good decision making, having a belief in a higher force, self-confidence, empowerment, and the ability to be a friend (Richardson et al., 1990).

Following disorganization, individuals will then reintegrate (i.e., reform a world view) in one of four ways: dysfunctionally, maladaptively, homeostatically, or resiliently (Richardson et al., 1990). Dysfunctional reintegration occurs when an individual copes with their adverse experience through destructive means, such as commiting or attempting suicide, substance abuse, performance enhancing drugs, or violence (Richardson et al., 1990; Galli & Vealey, 2008). Kathy Love Ormsby's suicide attempt (Mummery et al., 2004) is an example of dysfunctional reintegration. Maladaptive reintegration occurs when the significance of the adversity compels the individuals to make it through, but lose resilient qualities, such as positive attributional style, good self-esteem, and hope as a result (Richardson et al., 1990; Galli & Vealey, 2008). For example, a basketball player failed to make their free throws in the final quarter of a game, and loses self-confidence as a result no longer believing they are good at basketball. Homeostatic reintegration occurs when the individual powers through the adversity and returns to their initial level of functioning (Richardson et al., 1990; Galli & Vealey, 2008). For example, a soccer goalie gets scored on during sudden death penalty kicks by the opposing teams first kicker, but is not negatively impacted by it and gives the next four shooters her best defensive effort. The last, and most desirable form, is resilient reintegration. This occurs when an individual overcomes the adverse life event, and develops additional resilient qualities, such as increased motivation and work ethic,

as well (Galli & Vealey, 2008). Referring back to Pablo Morale's experience as an Olympic swimmer (Mummery et al., 2004), it is possible he viewed his temporary retirement as a chance to improve and work towards the gold medal he set his mind to. The Resiliency Theory concludes that if an individual wants to reintegrate resiliently to become more resilient, they must face stressors, life events, and challenges, become disorganized, reorganize and grow from the experience, and then develop the protective factors and skills necessary to overcome adversity moving forward (Richardson et al., 1990).

Richardson and colleagues (1990) suggest that from the time before an individual encounters adversity to the moment the individual reintegrates, four envirosocial processes occur: protective, enhancing, supportive, and reintegrating (Galli & Vealey, 2008). Envirosocial protective processes are those that buffer the stressors, adverse life events, and challenges one encounters. Living in comfortable and safe conditions, or growing up with protective parents are both factors that often help an individual adapt to their stressors. Envirosocial enhancing processes are focused on the development of effective negotiation with the adverse event after it happens to avoid complete disruption. Having a coach that empowers you and your teammates, and teaches responsibility in order to be a contributing member on the team is helpful for athletes to enhance protective factors. Envirosocial supportive processes involve the individual's available support resources and personnel and how they contribute to the extreme in which the individual reaches once they become disorganized. Disruption leading to disorganization is normal, but if an individual reaches a permanent or life-threatening level, they have a much lower chance of reintegrating. When an athlete reaches disorganization, having

teammates that are supportive, friends that express their love, and parents that are willing to help are beneficial factors during this process. The fall is healthy, but it's important to not let their fall reach a permanent or life-threatening level, in which they are unable to reintegrate. Lastly, the envirosocial reintegrating processes influence when and/or how an individual decides they want to pick themselves back up and restart. Support staff, such as an athlete's athletic trainer during this process helps individuals work through and solve problems creatively, as well as actively listen as they work through them outloud. The resources available to the individual have the ability to influence the reintegration process as well (Richardson et al., 1990). Richardson and colleagues (1990) conclude that these processes within the model should allow individuals to view their adverse events (i.e., stressors) as opportunities to become more resilient, rather than as failures.

However, this model had some limitations. First, the model was generalized, but not specifically towards athletes. The Resiliency Theory (Richardson et al., 1990) was developed in health education literature with the purpose of educating and training parents, administrators, teachers, and community programs among many others to train problem solving and planning skills as well as influence resilient reintegration in their children. Therefore, some of the details within the framework of The Resiliency Model are potentially irrelevant, such as the target population. Secondly, it is a linear model, representing one individual event of one point in the individual's experience. It does not consider the fact that athletes are likely experiencing multiple stimuli simultaneously. Lastly, the model exhibited a bias that coping is part of the resiliency process, meaning the purpose of measuring resilience may have been stretched to assume it is just a measure of one's ability to cope with stress (Connor & Davidson, 2003). This drawback

potentially steered researchers away from examining the true nature of resilience, which specifically involves positive adaptation in the presence of adversity (Fletcher & Sarkar, 2013). Though coping and positive adaptation are similar terms, coping refers to the cognitive and behavioral skill set an individual has that allow them to manage the demands of an adverse situation (Folkman & Moskowitz, 2004). On the other hand, positive adaptation is ultimately responding favorably and appropriately adjusting to adversity (Fletcher & Sarkar, 2012).

The Conceptual Model of Sport Resilience

Richardson's (2002) Resiliency Model proposes how protective factors influence an individual's ability to reintegrate. Considerable research has investigated the first wave of resiliency research, therefore Richardson (2002) suggested we shift our attention to the second wave to gather a better understanding of resilience as a process. To address this process, Galli and Vealey (2008) explored athletes' process of overcoming adversity in their sport and developed The Conceptual Model of Sport Resilience. Ten high-level former or current collegiate athletes were interviewed in regard to their experiences and perceptions of overcoming the most difficult experiences of adversity in their sport. These individuals answered questions based on The Resiliency Model (Richardson et al., 1990) as the guiding theoretical framework. In other words, both the *biopsychospiritual protective factors* component and *reintegration* component of the model were addressed by asking questions such as, "what traits drove you to respond to this adversity?" and "what was the outcome of your response to the adversity?" respectively (p. 320). For a greater understanding of the coping process of adversity, three research questions were addressed: "(1) How does the resilience process "work" in sport? (2) What factors

influence athletes' response to adversity? and (3) What role does the experience of adversity play in helping athletes to be resilient?" (Galli & Vealey, 2008).

Following the inductive analysis of the ten semistructured interviews, there were four adversities identified: (1) injury, (2) performance slump, (3) illness, and (4) career transition. In addition, ninety-four raw data themes were identified, and then combined to finalize twenty higher order themes and five general dimensions, all of which described their resiliency experiences. The five general dimensions of breadth and duration, agitation, personal resources, sociocultural influences, and positive outcomes were used to create a conceptual model of the resiliency process for the athletes in this study (Galli & Vealey, 2008). The first of the five general dimensions, *breadth and duration*, is that the athlete's adverse experience lasted over an extensive period of time, and had a harsh, long-lasting influence on their lives. The second dimension of the model, *agitation*, represented the athlete's implementation of behavioral and cognitive coping strategies (e.g., problem solving, acceptance), while simultaneously struggling with mental difficulties (e.g., losing confidence in themselves and their abilities, losing passion for the sport) and unpleasant emotions (e.g., feeling sad, angry, confused) from the adversity itself. The third and fourth general dimensions of *personal resources* (e.g., being positive, determined, competitive, mature, love of sport) and *sociocultural influences* (e.g., social support, cultural factors), respectively, served as the two underlying factors that influenced the individual's agitation within their resiliency process. Resilient qualities mentioned within these factors consisted of positivity, determination, competitiveness, commitment, maturity, persistency, having a passion for the sport, and having a strong network of social support. A specific cultural factor worth noting is race. Two of the

three African Americans that participated in Galli and Vealey's (2008) study stated their race as a constant hindrance throughout their personal lives and had in turn positively influenced the personal resources they used to positively adapt to stressors. Lastly, the fifth dimension was represented as the athlete's expression of *positive outcomes* (e.g., perspective, improvement, strength, learning) despite their adverse circumstances, which resulted from their agitation, and added to their personal resources, as shown in the model (Galli & Vealey, 2008).

The model generated by the authors answered the first research question of "how does the resilience process 'work' in sport?" The authors noted that resilience is likely not a personality trait, and further expands to conclude it is in fact a process, based on their findings. To answer the second research question (what factors influence athletes' response to adversity?), personality characteristics based on motivation and achievement, social support, and coping strategies were of the most common reported. In addition, the results suggested that personal growth and personal development result when athletes experience adversity. The answer to the third research question (what role does the experience of adversity play in helping athletes to be resilient?) supported Richardson and colleague's (Richardson et al., 1990; Richardson, 2002) Resiliency Model. The athletes in this study reported that an essential aspect of their resiliency process were positive outcomes despite experiencing adversity. Although they struggled, they viewed that struggle as something that would make them stronger, enhance their personal resources, better prepare them to face adversity in the future, and ultimately experience personal growth and development. This conceptual model, along with The Resiliency Model (Richardson et al., 1990; Richardson, 2002) supported that although athletes

experience negative psychological effects after experiencing adversity, they may also experience personal growth and development by gaining additional protective factors as a result (Galli & Vealey, 2008).

Galli and Vealey's (2008) study was the first to determine that resilience is a process in sport and emphasized how important it is for researchers studying resilience in sport to consider both personal and environmental factors. However, this model did have some limitations. First, the interviews of the participants were only one time in-person interviews, as opposed to several interviews throughout a longer timespan. A longitudinal approach would have allowed a greater understanding of the experience with resiliency to more accurately hypothesize a phenomenon. Secondly, the participants included in this study had each experienced their greatest adversity at different points, meaning there were some participants still working through their adverse event and others that have been several years removed from their experience. This may have subjected some participants to recall bias. Thirdly, all of the participants in the study described how they were able to successfully overcome their adverse event. If the study included participants that unfavorably responded (i.e., reintegrate homeostatically, maladaptively, or dysfunctionally) to a great adverse event in their sporting career, it may have revealed what factors strictly correlated with reintegrating resiliently, more specifically in sport settings (Galli & Vealey, 2008). In addition, the inclusion criteria for adverse events experienced by the participants was very broad. Therefore, it is not likely the participants were able to completely understand the depth in which any of the factors influenced resilience for their specific adverse event (Galli & Gonzales, 2015). Lastly, Fletcher and Sarkar (2013) argued that although the model did include mental struggles and unpleasant

emotions, it did not consider one's cognitive appraisal of those emotions and how that impacted the process of reintegration. In addition, they agreed this model relied too much on Richardson and colleagues' (1990) Resiliency Model from health education literature.

Machida and colleagues (2013) also used Richardson and colleagues' (1990) Resiliency Theory as a guiding framework to research the resiliency process of 12 rugby players that acquired a spinal cord injury and are now in wheelchairs. The purpose of the study was to research the rugby player's resiliency process from their trauma, and how the sport itself played a role in their resiliency process. Interview questions were structured based on three main areas: (a) the adverse event in which the individual became injured, including how they were feeling and what they were thinking at the time, (b) a description of their coping strategies and social interactions that made up their resiliency process, and (c) the positive and negative attributes that either helped or adversely impacted coping with the trauma and losing physical capabilities. Seven categories emerged that explained the processes: (1) pre-existing factors and experiences, (2) disturbance, (3) multiple sources and types of support, (4) special opportunities and experiences, (5) various behavioral and cognitive coping strategies, (6) motivation to adapt, and (7) gains from the resiliency process (Machida et al., 2013).

Pre-existing factors, such as competitiveness, attentiveness, flexibility with failures, being open to challenges, having the ability to focus on the present, a balanced and leadership-oriented personality, a positive attitude, spiritual faith, and an independent mindset, as well as positive past experiences or lack of ACEs (CDC, 2019; e.g., good parents, growing up with a positive role model) helped them gain positive qualities after their trauma. Having various networks of support from various sources (e.g., significant

others, family, doctors, friends, coaches, etc.), coping strategies to help manage negative thoughts and emotions, and the motivation to adapt to all of the changes also helped them to overcome their adversity and develop resilient qualities. Rugby helped these individuals overcome their adversity and positively adapt by providing them with a platform to try new opportunities, experience achievement in various ways, build confidence, express emotions, and lean on and learn from each other as a source of support (Machida et al., 2013).

The Machida and colleagues' (2013) study went beyond the context of optimal sport performance and addressed the relevance of sport resilience education (Galli & Gonzalez, 2015). In addition, it provided information about the process of resilience from a population that chose sport as an outlet to adapt to their adverse experience. The athletes in Galli and Vealey's (2015) study chose to participate in sport to physically and psychologically adapt to their physical disability, which brought attention towards the positive influence sport can have on those who experienced adverse events. However, limitations included its dependence on Richardson and colleagues' (1990) Resilience Theory and its bias towards coping as an integral part of the resilience process (Fletcher & Sarkar, 2012). To address some of these limitations, a grounded theory approach was implemented in order to investigate the relationship between resilience and optimal sport performance (Fletcher & Sarkar, 2012).

A Grounded Theory of Psychological Resilience in Olympic Champions

A Grounded Theory of Psychological Resilience in Olympic Champions model was developed based on the responses from successful gold medal Olympians from the 1960's decade through the 2000's decade. Because attaining Olympic champion status

was more than likely considered the highest achievement in sport, these athletes are or were the best of the best talent in the world during that time, physically and psychologically. Therefore, since the Olympic Games is a competition between the best of the best in the world, it is likely the athletes experienced a wide range of competitive, organizational, and personal stressors that tested their abilities to perform at their best. Those who have been able to overcome those stressors and win the gold medal have then proven they have specific characteristics that set them apart from athletes that are less successful (Gould et al., 2002; Gould & Maynard, 2009; Hardy et al., 1996; Krane & Williams, 2006; Fletcher & Sarkar, 2012).

Twelve Olympic gold medalists were interviewed in this study. Conversational life story interviews centered around each Olympians sporting career were administered. Amongst various open ended questions, participants were asked to describe an event from their athletic career that they felt was important on their journey to the Olympic Games, what they were thinking at that time, and what particular personal traits they felt they had and/or used to conquer that event. The Olympic champions faced various personal, competitive, and organizational stressors throughout their careers. Stressors relating to ongoing daily demands, such as balancing work with their training, and major life events, such as the loss of a significant other, had varying impacts on the participants in this study. However, a majority of the participants indicated that the stressors they encountered played a vital role in their success as an Olympic champion. They argued that even the significant adversities they experienced, such as parental divorce, serious illness, and career-threatening injuries, came at the ideal time for them. Without the

exposure to such adversity at that specific time, they believe they would not have been able to become an Olympic champion (Fletcher & Sarkar, 2012).

The results of Fletcher and Sarkar's (2012) study indicated five psychological experiences relating to a positive personality, motivation, confidence, focus, and perceived social support were all significant in promoting a facilitative (i.e., beneficial) response for athletes. These factors served as protective factors from the potentially negative consequences of facing stressors by positively influencing their challenge appraisal and meta-cognitions (i.e., evaluating their own thinking/thoughts; Galli & Gonzalez, 2015). These cognitive reactions produced ideal facilitative responses (e.g., increased task engagement), ultimately resulting in optimal sport performance (Fletcher & Sarkar, 2012; Galli & Gonzalez, 2015).

Challenge Appraisal

Fletcher and Sarkar (2012) concluded that "the core component of this grounded theory was based on the positive evaluation and meta-cognition of stressors" (p. 673). Challenge appraisal occured when an athlete viewed an event or circumstance as something that was relevant to the achievement of their goals, and believed they had the means to handle those demands (Lazarus & Folkman, 1984). The athletes in Fletcher and Sarkar's (2012) study were appraising their hardest challenges as opportunities for personal growth, development, and mastery. They believed the stressors they encountered allowed them to foster a "psychological and competitive edge" over their opponents and teammates (Fletcher & Sarkar, 2012, p. 673). Participants in Fletcher and Sarkar's (2012) study cited that if they were not chosen for an international competition, they knew they needed to work harder. These Olympic champions reported that losing competitions were

seen as learning experiences for competitions in the future. The following quote (Fletcher & Sarkar, 2012) is an example from the study in which an athlete had appraised a challenge and ultimately resulted in a positive behavioral response:

> I remember one of my coaches saying to me what was I doing over Christmas and I said 'Oh, I'll be training twice on Christmas Day. I know [opponent's name] won't be training on Christmas Day twice and that will give me the edge'. It was more the mental side of things because I knew that I'd be doing something that he wasn't doing (p. 673).

Meta-Cognitions

The other core component was meta-cognition, which is "the process of evaluating their own thoughts, as opposed to the environment" (Fletcher & Sarkar, 2012, p. 673). Flavelle (1979) first described meta-cognition as one's "knowledge and cognition about cognitive phenomena" (p. 906). However, the way this concept was understood in Fletcher and Sarkar's (2012) study was dependent on where the participants were in their sporting journey. First, and primarily early on in their lives, these Olympic champions were very aware of their goals when faced with certain situations. Secondly, during the peak of their careers, these Olympic champions used psychological techniques, such as self-talk, imagery, and relaxation and activation to maintain control of their cognitions. Thirdly, typically more towards the second half or end of their athletic careers, these Olympic champions accepted that their experience had the potential to positively or negatively influence their sport performance. The following quote (Fletcher & Sarkar, 2012) is an example from the study in which an athlete used meta-cognition before his Olympic final:

> I've never ever been more nervous than before the final. And one of the things I used [was] visualization. I saw one of the co-favorites take a start and he appeared to fly round the first bend. And so my heart hit my throat. Then I thought, 'oh my God, I've got to run faster than that?' And I recognized how unhelpful that negative thought was so... I just thought 'get a grip' and I thought 'when have you felt really powerful and flowing? (p. 673)

Fletcher and Sarkar's (2012) grounded theory approach highlighted five psychological factors, which are represented together as having an influence on challenge appraisal and meta-cognition. Numerous psychological factors related to positive personality, motivation, confidence, focus, and perceived social support interacted to influence the stress-resilience-performance relationship based on the specific stressors they encountered and the context in which they arised (Fletcher & Sarkar, 2012). The first of the five psychological factors determined in this study was positive personality.

Psychological Factors

Positive Personality

Personality traits have been defined as "the relatively enduring patterns of thoughts, feelings, and behaviors that reflect the tendency to respond in certain ways under certain circumstances" (Roberts, 2009, p. 140). Various positive personality traits, such as being open to new experiences, extraversion, proactiveness, optimism, innovative, consciousness, and emotionally stable were possessed by the Olympic champions in this study. Referring back to Pablo Morales's career, his optimistic and proactive personality may have been one of the many factors that had driven him to his ultimate success (Mummery et al., 2004). In this study, the Olympic champions

possessed a proactive personality, meaning they were able to determine opportunity within their athletic environment, and then act accordingly to bring out positive results. Proactive personality individuals show strong initiative and perseverance in the presence of challenges (Bateman & Crant, 1993; Fletcher & Sarkar, 2012).

Within the extent of my knowledge, only one other study in sport psychology literature has identified proactivity as an influential personality characteristic in sport. Baker and colleagues (2005) examined the cognitive differences between successful and less successful performers in endurance and ultra-endurance sports. More specifically, they examined the differences between expert, middle of the pack, and back of the pack ultra-endurance triathletes. The results of this study were that the experts focused their thoughts more on their performance, whereas the middle and back of the pack performers had thoughts less related or unrelated to their performance. In addition, the experts reported more proactive cognitions, suggesting that proactive individuals were more likely to enhance their performance by properly managing situations and creating opportunities for themselves (Baker et al., 2005). In addition to positive personality, motivation was also emphasized as one of the five influential psychological factors.

Motivation

Gold medalists in Fletcher and Sarkar's (2012) study expressed different types of motivation throughout their careers. Initially, their reasons for competing included having a strong passion and love for the sport, the enjoyment of setting and achieving goals, and for social recognition. As they progressed through their careers, their reasons for competing shifted more towards the opportunity to demonstrate their competence, proving their worth to others, and being the best version of themselves that they can be.

All of these reasons make up for both intrinsic (i.e., participating in sport because it is rewarding to you) and extrinsic (i.e., participating in sport because you want to be rewarded with something or avoid consequences) motives. However, supporting previous research on the motivation of elite performers (Mallett & Hanrahan, 2004), resilient athletes have been found to embody and incorporate more self-determined forms of extrinsic motivation, meaning they saw value in the external demands associated with their sport. For example, an extrinsically motivated athlete's behaviors may have been driven by the praise from their teammates, versus an intrinsically motivated athlete's behaviors that may have been driven by the joy it brought them. Viewing these demands as important influenced their choice to participate and compete within the challenges associated within their sporting environments (Fletcher & Sarkar, 2012). A third psychological factor, confidence, was also highlighted in Fletcher and Sarkar's (2012) grounded theory approach.

Confidence

Confidence from a variety of sources was particularly valued by these Olympic gold medalists as well. Pertinent sources of confidence identified within Fletcher and Sarkar's (2012) study stemmed from the coaches and teammates of the gold medalist's as well as from their extensive preparation, self-awareness, experience, and visualization. The majority of Olympic champions in Fletcher and Sarkar's (2012) study expressed an extremely high level of self-confidence, meaning they possessed a sky-high degree of certainty about their abilities to be successful in their sports, consistent with previous research (Vealey, 1986). However, towards the end of their careers, participants began to describe feeling less confident despite achieving optimal performance in their sport. This

suggests that those who expressed lower levels of self-confidence may have had higher levels of confidence stemming from external sources, such as their coaches (Fletcher & Sarkar, 2012). This highlighted the important role social support had in sports. Confidence has been highly emphasized in sport resilience research. A psychological factor that has not received as much attention is focus.

Focus

Focus was an important factor determined within Fletcher and Sarkar's (2012) study. More specifically, having the ability to stay focused on themselves and not get distracted by others around them, staying focused on the process rather than the outcome, and the ability to switch their focus on and off to meet the demands of given circumstances were essential for the Olympic gold medalists in Fletcher and Sarkar's (2012) study. Having the ability to switch their focus on and off allowed the Olympic champions to understand how to regulate their training to reduce the risk of injury, which had been shown to have a negative influence on Olympic athlete's performance (Greenleaf et al., 2001). Having the ability to shift their focus on and off was vital to the success of the Olympic champions, in that they were better equipped to manage the stressors and pressures within their sporting environment (Fletcher & Sarkar, 2012). Lastly, along with positive personality, motivation, confidence, and focus, perceived social support from the Olympic champions was the final psychological factor identified in this study.

Perceived Social Support

Lastly, the participants in Fletcher and Sarkar's (2012) study expressed that they consistently perceived a high level of social support from their family, coaches,

teammates, and other support staff. For the Olympic champions that were medaled prior to 1990, they primarily perceived consistently available social support from their family and coaches, compared to those who were medaled after 1990 who perceived consistently available social support from all four sources. DeFreese and Smith (2013) also found social support to be valuable while researching a group of collegiate student-athletes. Team social support was found to be negatively associated with perceptions of athlete burnout and positively associated with adaptive forms of motivation (DeFreese & Smith, 2013). These findings suggested how perceived social support acted as a buffer that positively impacted adversity, which made it a valuable component of resilience in elite sport (Fletcher & Sarkar, 2012).

Facilitative Responses

These five psychological characteristics influenced the Olympic gold medalist's challenge appraisal and meta-cognitions, which in turn promoted facilitative responses. These athletes were able to respond to their stressors by taking personal responsibility for their thoughts, feelings, and actions. Facilitative perception of emotions, effective decision making, self-reflection, and increased task engagement were all facilitative responses from the Olympic champions in this study (Fletcher & Sarkar, 2012). In support of Fletcher and Sarkar's (2012) study, previous research also indicated that facilitative responses such as increased effort and commitment to decisions assisted performance in the best athletes in the world, particularly when they possessed high levels of confidence (Hays et al., 2009).

When these Olympic champions expressed facilitative responses, they achieved optimal performance, which was considered winning an Olympic gold medal for Fletcher

and Sarkar's (2012) particular study. However, although these athletes were medaled as the best of the best in the world, they did not always view their gold medal winning moment as their optimal sport performance. Participants described their optimal sport performance as when they reached their best athletic potential. For example, if a runner did not beat their personal record, but still won the gold medal, that Olympian would not consider that competition as their optimal sport performance. They pointed out that they exhibited facilitative responses in later competitions in which they reached their full athletic potential (Fletcher & Sarkar, 2012). Overall, the facilitative responses of these Olympic athletes bundled together exemplified positive adaptation to stressors, essentially portraying resilience.

Although Fletcher and Sarkar's (2012) grounded theory approach is the most recent sport resilience research available, it is not without its limitations. First, the findings of Fletcher and Sarkar's (2012) study were not generalizable to all athlete populations, considering it was specific to Olympic level athletics. Secondly, there were participants in the study that had won their gold medal more than 40 years prior, suggesting recall bias may have had an effect. Lastly, the proposed model by Fletcher and Sarkar (2012) did not entirely consider the impact socio-environmental factors have on one's ability to adapt favorably. Other qualitative studies (Galli & Vealey, 2008; Machida et al., 2013) have referenced socio-environmental factors as an important component to consider in resilience research (Fletcher & Sarkar, 2012; Galli & Gonzalez, 2015). However, regardless of its limitations, there were several strengths within Fletcher and Sarkar's (2012) findings.

Fletcher and Sarkar's (2012) work with the 12 Olympic champions provided the first definition of resilience within an athletic context (Sarkar & Fletcher, 2014; Galli & Gonzalez, 2015). Since the discovery of these results, there has not been any further research on Olympic gold medalists that have attempted to explain (rather than describe) a psychological phenomenon based off of grounded data. In other words, this was a qualitative design based off of the information presented to the researchers from the Olympic champions. Another strength of the work done by Fletcher and Sarkar (2012) was that meta-cognition was identified as an important factor of resilience in sport for the first time, bringing light to a new area in sport resilience research. In addition, it was the first resilience study to reveal and explain the role that psychological factors had in the stress-resilience-performance relationship. However, the major strength within this study was the nature of the participants, representing a variety of characteristics related to gender, age, sport, experience, and culture. The various different subjects involved increased the usefulness and practical significance of the results in Olympic level athletics (Fletcher & Sarkar, 2012).

One particular component found within Fletcher and Sarkar's (2012) results highlighted the participants' challenge appraisal. Several athletes reported that when they experienced the adversity that led them to not making the cut for international competitions, it pushed them to work harder. It was also frequently cited that participants' losses in competition served as learning opportunities, and were used to identify and improve themselves for future competitions. Fletcher and Sarkar's (2012) findings highlighted how important elite athlete's appraisal is and suggested that the process of challenge appraisal is an extremely significant component illustrating the relationship

between psychological resilience and optimal sport performance. The participants in Fletcher and Sarkar's (2012) study appraised stressors as opportunities to improve and grow because they were able to optimize five psychological factors relating to a positive personality, motivation, confidence, focus, and perceived social support. Of the many psychological variables mentioned related to these five factors, two of the positive personality characteristics highlighted in additional sport resilience literature are optimism and hardiness.

Optimism

Lee et al. (2008) defined optimism as "the tendency to believe that one will generally experience good outcomes in life" (p. 417). Although optimism within the Fletcher and Sarkar (2012) grounded theory was labeled as a characteristic within the five psychological factors that lead to an optimal performance outcome, optimism has been relevant in research as a predictor variable as well. In addition to the findings from Greeff and Human (2004) previously mentioned, optimism has been identified to have a positive relationship with resilience in various other studies. A meta-analysis identified several relevant factors related to resilience and found that the largest effect was attributed to protective factors, such as optimism (Lee et al., 2013). Optimism has also been found to be a predictor in specific populations, such as aging women (Lamond et al., 2008), medical students (Souri & Hasanirad, 2011), and burn patients (He et al., 2013). When looking into the key components of successful aging in a sample of 1,395 women over the age of 60, one of the strongest predictors of resilience was optimism (Lamond et al., 2008). Carver and colleagues (2010) stated that optimism accompanies resilience when individuals are faced with stressful, or adverse situations. In other words, resilient

individuals hold a desire to be optimistic when faced with difficult situations. Consistent with additional findings from this article (Carver et al., 2010), similarities were found when researchers investigated the relationship between resilience, optimism, and psychological well-being in a sample of 414 medical students. Results from this study indicated that personal traits, such as resilience influenced one's psychological well-being. However, an individual's optimism can potentially impact one's psychological well-being as well, regardless of their degree of resilience (Souri & Hasanirad, 2011). In a similar study by He and colleagues (2013), a total of 410 burn victims who have suffered from mental health difficulties as a result of their trauma were investigated to determine the impact of dispositional optimism and psychological resilience on subjective well-being. Results revealed that both dispositional optimism and psychological resilience significantly correlated with subjective well-being (He et al., 2013).

In a sport performance context, optimism has been found to be a relevant component in the existing literature on athlete personality characteristics (Fletcher & Sarkar, 2012). Wilson and colleagues (2002) investigated the impact optimism and pessimism had on performance in 74 college student-athletes. Results revealed that compared to the pessimistic cognitive oriented individuals, the participants with optimistic cognitive orientations had significantly lower levels of precompetition anxiety. Another study (Gaudreau & Blondin, 2004) researched dispositional optimism and pessimism and how these traits impacted an athlete's affective states, ability to cope, and ultimately reach their goals during a sport competition. Results revealed that the athletes with dispositional optimism had a greater ability to adjust their emotions during sport

competition to best benefit themselves, compared to those with dispositional pessimism (Gaudreau & Blondin, 2004). Similarly, Grove and Heard (1997) linked optimism with task-oriented coping after a stressor, such as a slump in performance. There has also been a variety of research relating optimism with explanatory style, revealing that those who had an optimistic explanatory style were more likely to positively adapt after experiencing adversity (Coffee & Rees, 2011; Coffee et al., 2009; Martin-Krumm et al., 2003). Optimism as a predictor of factors related to resilience in sport, with all of the stressors within a student-athlete's lifestyle considered, has yet to be investigated.

Hardiness

A growing body of research suggests hardiness is a combination of three personality dispositions (commitment, control, challenge) that function together to resist the potential negative impact of the stressors one faces (Kobasa et al., 1982). The first dimension, commitment, is displayed in individuals who have the "ability to feel deeply involved in or committed to the activities of their lives" (Kobasa, 1979, p. 3). The second dimension, control, is displayed by individuals that believed they were able to control or have at least some influence on the experiences that took place in their lives (Kobasa, 1979). Lastly, the third dimension, challenge, is displayed in individuals who feel positive about their lives and all of the changes within it because they appraise challenges as stimulating rather than threatening (Maddi, 2006). The challenge dimension within hardiness is similar to Fletcher and Sarkar's (2012) grounded theory approach, in which it was determined that the greatest athletes in the world appraised challenges as opportunities for personal growth, development, and mastery.

Hardiness has been reported to be significant in registered nurses reporting decreased stress levels and increased job satisfaction levels (Judkins & Rind, 2005), and college students showing a greater likelihood of completing their academic courses at their institution (Lifton et al., 2000) and achieving superior final degree classification at graduation (Sheard, 2009; Sheard & Golby, 2007). Psychological hardiness has also been found to be a significant predictor of success in individuals who completed an Army Special Forces candidate school (Bartone et al., 2008). In sport, greater hardiness scores have indicated an increased ability to cope more effectively with adversities in football players (Goss, 1994; Kelley, 1994) and are related to decreased injury time-loss in high-level athletes (Ford et al., 2000). In a study that investigated the relationship of resilience and hardiness with sport achievement and mental health, results revealed a positive relationship of resilience and hardiness with sport achievement and psychological well-being and a negative relationship with psychological distress which can predict the variations related to sport achievement & psychological well-being and distress in athletes (Nezhad & Besharat, 2010). However, hardiness as a predictor of resilience in sport when considering all of the stressors within the lives of student-athletes has yet to be investigated.

Gaps in the Literature

The two components within the definition of resilience are (1) experiencing adversity and (2) positively adapting regardless (Fletcher & Sarkar, 2013). To encompass adversity as both the everyday hassles as well as the more significant life events, a more neutral term “stressor” has been used in sport psychology literature. Stressors have been defined as, “the environmental stimuli encountered by an individual” (Fletcher et al.,

2006, p. 359). Collegiate student-athletes have particular life circumstances compared to those who are non-athletes (Lu et al., 2012). For a student-athlete, stressors have been found to associate with personal "non-sporting" factors, competition within their sport, and the organization in which they compete. Examples of stressors are personal relationship difficulties (Gould et al., 1993), inadequate preparation before a competition, and faulty playing surfaces or facilities. In addition, more significant adverse life events such as adverse childhood experiences (ACEs) are unfortunately very common and have been linked to lasting, negative effects on health, opportunity, and well-being in adulthood (CDC, 2019).

One's ability to adapt positively to adversity is influenced by the protective factors the individual may possess that buffer the impact of the stressors (Richardson, 2002; Fletcher & Sarkar, 2012). Being in a supportive environment, having an easy temperament, decent planning skills, and good self-esteem were protective factors specifically identified in children who have encountered adversity (Garmezy, 1991; Rutter, 1990; Werner & Smith, 1992). In addition, Werner (1982) identified achievement-oriented, independence, determination, and self-competence as resilient determinants in children. Although many of the attributes found in children overlap with those found in adults and families, additional personality characteristics have been discovered. Optimism (Greeff & Human, 2004), hardiness (Bonanno, 2004), self-confidence (Richardson et al., 1990), self-efficacy (Gu & Day, 2007), extraversion (Campbell-Sills et al., 2006), enhanced attribution style (Kleiman et al., 2013), and tolerance for pain (Richardson et al., 1990) have been identified as protective factors in adults and families that have experienced adversity. A more recent topic in resilience

research has been how athletes were to positively adapt within the face of adversity. Resilience has been best understood in the context of the specific domains being studied. Therefore, because competitive sport is relatively unique, the relevance of these findings needs to be explored in sport performers (Galli & Gonzalez, 2015). Many models, starting with Richardson and colleagues' (1990) Resiliency Model have been used to explore this domain.

In addition to personality traits as protective factors, Richardson and colleagues (1990) expanded on the impact of the individual's environment and social interactions towards their ability to positively adapt. The Resiliency Model (Richardson, 2002; Richardson et al., 1990), with support from The Conceptual Model of Sports Resiliency (Galli & Vealey, 2008), also presented the idea that experiencing consistent adversity allows individuals the opportunity to develop additional protective factors and achieve personal growth as a result.

The Conceptual Model of Sports Resiliency (Galli & Vealey, 2008) added the role mental processes have in the resilience process for elite athletes specifically. Coping strategies such as seeking social support and positive reinterpretation were introduced as effective methods towards reintegration. Personality characteristics such as positivity, determination, competitiveness, commitment, maturity, and persistence in addition to the love and passion for the sport have been identified as personal resources. In combination with sociocultural influences (e.g., social support, cultural/structural factors) impacted how an individual uses their coping strategies to work through their unpleasant emotions and mental struggles. As a result, elite athletes expressed positive outcomes (learning from their experience, strength, realization of support) after experiencing their biggest

adverse event in their career. Therefore, it has been concluded that resilient athletes develop additional protective factors and achieve personal growth and development from their experiences (Galli & Vealey, 2008).

Lastly, the grounded theory approach (Fletcher & Sarkar, 2012) suggested there are five psychological characteristics that influenced an athlete's challenge appraisal and meta-cognition. The best athletes' positive personality, motivation, confidence, focus, and perceived social support influenced their ability to appraise challenges as an opportunity for personal growth, development, and mastery. In addition, these five psychological factors influenced the best athletes to be aware of and in control of their own thoughts and thinking. Their challenge appraisal and meta-cognitions lead to facilitative responses, such as beneficial perception of emotions, effective decision-making, self-reflection, and increased task engagement. All of these facilitative responses correlated with optimal performance (Fletcher & Sarkar, 2012). Although the grounded theory approach supports Richardson and colleagues (1990) personal growth and development conclusion, it does not consider the envirosocial factors that impact one's ability to positively adapt such as those mentioned in The Conceptual Model of Sport Resilience (Galli & Vealey, 2008).

To summarize, the existent research concluded that multiple protective factors relating to a positive personality, motivation, confidence, focus, and perceived social support have been identified as influencing resilience in Olympic champions (Fletcher & Sarkar, 2012). In combination with the environmental factors, such as weather conditions, and sociocultural factors, such as social support and individual's culture

mentioned in The Resiliency Model (Richardson et al., 1990; Richardson, 2002) and The Conceptual Model of Sport Resilience (Galli & Vealey, 2008), these factors all had an impact on how an athlete appraised challenges and their meta-cognitions. Viewing challenges as opportunities to improve and being aware of one's own thoughts lead to athletes responding favorably to those challenges (Fletcher & Sarkar, 2012). Facilitative responses lead the world's best athletes to optimally perform (Fletcher & Sarkar, 2012). However, these findings all resulted from athletes interviewed about their biggest adverse event and how they were able to reintegrate from it, assuming they were all able to. Research has not isolated athletes who have not been able to overcome their adverse events. In addition, both The Conceptual Model of Sport Resilience (Galli & Vealey, 2008) and the grounded theory approach (Fletcher & Sarkar, 2012) represented one adverse moment at one moment in time. That is unrealistic considering most elite athletes are experiencing more than one stressor at a time, such as a breakup with a partner, parental divorce, or failed class project (Sarkar & Fletcher, 2014). Not only were the criteria for adverse events experienced by participants very broad, but the interview questions steered athlete's responses towards things that they encountered within their sport, rather than how stressors in their lives from a holistic perspective impacted their sport and therefore, influenced their performance either positively or negatively. In addition, the impact ACEs had on those individuals during their time as a collegiate student-athlete had not yet been investigated. All together, there is a large gap in quantitative research in the area of resilience in sport.

Achieving optimal sport performance regardless of the stressors these athletes encountered labeled them as resilient individuals (Fletcher & Sarkar, 2012). Therefore, each aspect of Fletcher and Sarkar's (2012) model can be broken down to answer several other questions regarding resilient athletes. Of the possibilities was the impact a positive personality has on resilient individuals, more specifically within the collegiate student-athlete population. The predictability of positive personality characteristics on resilience in collegiate student-athletes has yet to be investigated. Two positive personality characteristics, optimism and hardiness, have been frequently cited in sport psychology literature. Optimism has been found to predict resilience in various populations, such as aging women, medical students, and burn patients (Lamond et al., 2008; Souri & Hasanirad, 2011; He et al., 2013; Carver et al., 2010). In addition, optimism has been found to be relevant in several studies involving the performance enhancement of college student-athletes in competitive sport (Wilson et al., 2002; Gaudreau & Blondin, 2004; Grove & Heard, 1997). Hardiness has been found to correlate with performance of registered health care nurses (Judkins & Rind, 2005), college students (Lifton et al., 2000; Sheard, 2009; Sheard & Golby, 2007), and United States Army Special Forces candidates (Bartone et. al., 2008). In sport, higher hardiness scores have correlated with an increased ability for football players to cope (Goss, 1994; Kelley, 1994) and relates to decreased injury time-loss in high-level athletes (Ford et al., 2000). Both optimism and hardiness have been considered positive personality characteristics that may or may not predict resilience in collegiate student-athletes. Although there are a variety of adverse experiences within the student-athlete's lifetime, it has not be determined whether or not all student-athletes show signs of resilience. Therefore, the purpose of the present study is

to assess the relationship between stressors, challenge appraisal, and personality characteristics with resilience in collegiate student-athletes.

PROPOSAL

METHODS

This chapter includes an overview of the participants and demographics, as well as the five variables (stressors, challenge appraisal, optimism, hardiness, and resilience) and the instruments that will be used to measure them. The procedures and brief data analysis follow based on the research questions and hypotheses.

Participants

Participants will consist of approximately 300 male and female intercollegiate student-athletes, all of whom are currently enrolled in National Collegiate Athletic Association (NCAA) Division III institutions located in the Northeast region of the United States. Inclusion criteria consist of student-athletes that are 18 years of age or older and are listed on the sport team's current or most recent roster. All subjects will be provided with an informed consent document before participation (Appendix A).

Demographical data will be obtained from each of the participants. Participants will provide their self-reported gender identity and sexual orientation, age, current academic year, college major/area of study, intercollegiate sport(s), what part of the season their team is in, number of years of experience in that sport(s), other sports played, number of years of experience in those sports, household income, and family size. Possible answers will be listed under each question and participants will be instructed to select their answer. If a question is an open-ended question, participants will be asked to type in their desired answer. Participants will also be asked to indicate whether they have

experienced a major personal injury and/or illness, death or serious illness/injury of close friend(s), death or serious illness/injury of close family member(s), breaking up with a significant other, and/or financial problems concerning school within the last year. Then, participants will be asked to indicate what kind of an effect each event they selected had on their life when the event occurred on a scale of -4 to +4. A rating of -4 would indicate that the event had an extremely negative effect and a rating of +4 would indicate that the event had an extremely positive effect (Appendix B).

Procedures

Approval from the Ithaca College Institutional Review Board (IRB) will be obtained before participants are recruited. While awaiting IRB approval, researchers will contact athletic directors at potential academic institutions to request their interest and approval to contact the coaches at the corresponding institution (Appendix C). Once IRB has approved the current study and approval has been granted by the involved athletic directors, all coaches of intercollegiate teams from involved institutions will be contacted via email describing their participation in the study (Appendix D). This initial email will also provide instruction for how to forward the information to participate to their student-athletes. A bolded email at the end of the initial email from the researchers to the coaches will be provided, (Appendix E) in which the coach is instructed to copy and paste via email to all of their student-athletes. The email coaches send out to their student-athletes will include the link to the survey. Upon clicking on the link, student-athletes will be directed to an implied consent form prior to completing the survey if they choose to do so. Participants will electronically complete the survey on their own time to decrease the risk for emotional distress. All questionnaires will be anonymous, therefore after

completion of the survey, participants will not be able to drop out of the study because there will be no identifiable information to connect the survey to the participant.

Measures

Six instruments will be utilized in this study. The Collegiate Student-Athlete's Life Stress Scale (CSALSS; Lu et al., 2012) will be used to measure general life stress and sport-specific life stress collegiate student-athletes potentially encounter on a daily basis. The Adverse Childhood Experiences Questionnaire (ACEs; Felitti et al., 1998) will be used to measure adversity within the first 18 years of one's lifetime. Both the CSALSS and ACE's instruments represent stressors. The Challenge and Threat in Sport Scale (CAT-Sport; Rossato et al., 2018) will be used to measure challenge appraisal. The Life Orientation Test-Revised (LOT-R; Scheier et al., 1994) will be used to measure optimism. The Dispositional Resilience Scale-15 (DSR-15; Bartone, 2007) will be used to measure hardiness, and it's three subscales of commitment, control, and challenge. Both the LOT-R and DRS-15 instruments represent the personality characteristics of interest for the present study. The Connor-Davidson Resilience Scale-10 (CD-RISC-10; Campbell-Sills & Stein, 2007) will be used to measure resilience.

Stressors

Two instruments will be used to measure stressors encountered by collegiate student-athletes. The College Student-Athlete's Life Stress Scale (CSALSS; Lu et al., 2012) is a 24-item scale used to assess college student-athletes perceptions of their daily stressors in their general life and in their sport (Lu et al., 2016; Appendix F). Within this scale are eight subscales: (a) sports injury, (b) performance demand, (c) coach relationships, (d) training adaptations, (e) interpersonal relationships, (f) romantic

relationships, (g) family relationships, and (h) academic requirements (Lu et al., 2012). The four subscales of sports injury, performance demand, coach relationships, and training adaptations are categorized as sport-specific life stress. The remaining four subscales of interpersonal relationships, romantic relationships, family relationships, and academic requirements are categorized as general-life stress (Chyi et al., 2017). The Cronbach's alpha for these eight subscales (.66–.87) and the reliability for all items (.86–.93) have both been shown to be adequate (Chyi et al., 2017; Lu et al., 2016; Lu et al., 2012).

Each of the 24 items represents a statement that describes something that has the potential to negatively impact their daily life as a collegiate student-athlete. For example, "I worry about my unstable competitive performance" is one of the items on the scale. Participants will respond to each of the items on a 6-point Likert scale indicating how often they experience it: 1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *quite often*, 5 = *very often*, and 6 = *always* (Lu et al., 2012). A composite score of both sport-specific and general-life stressors will be used for statistical analysis (Chyi et al., 2017).

A second instrument that will be used in the current study to assess stressors in collegiate-student athletes, more specifically before their eighteenth birthday, is the Adverse Childhood Experiences Questionnaire (ACEs; Felitti et al., 1998). This questionnaire consists of 10 questions relating to three different categories (abuse, household challenges, neglect) of potentially traumatizing events in an individual's childhood (Appendix G). Three questions address abuse (emotional, physical, sexual), five questions address household challenges (mother treated violently, substance abuse, mental illness, parental separation/divorce, incarcerated household family member), and

two questions address neglect (emotional, physical) during childhood. Participants will be asked if they had experienced each of the 10 items while they were growing up, during their first 18 years of life, and will be instructed to report either "yes" "no," or "prefer not to answer." Each "yes" response represents one ACE. ACE scores will range from 0 (no exposure to ACEs) to 10 (exposed to all ACEs). The greater ACE score one has, the greater the risk one has of developing health related issues throughout their adulthood. The total ACE scores for each participant will be used for statistical analysis.

Challenge Appraisal

Challenge appraisal will be measured using the Challenge and Threat in Sport Scale (CAT-Sport; Rossato et al., 2018). The CAT-Sport Scale is a 12-item sport-specific scale used to measure athlete's experiences of the two factors of challenge and threat (Appendix H). The CAT-Sport Scale has been shown to have good levels of internal consistency for both threat ($\alpha = .90$) and challenge ($\alpha = 0.83$).

Of the 12 items in the CAT-Sport Scale, seven items are within the threat subscale and five are within the challenge subscale. Statements such as, "I am concerned what other people will think of me" (threat), and "I am looking forward to the rewards and benefits of success" (challenge) exist within the CAT-Sport Scale. The items are assessed on a 6-point Likert scale: 1 = *totally disagree*, 2 = *rather disagree*, 3 = *disagree to some extent*, 4 = *agree to some exten*t, 5 = *rather agree*, 6 = *totally agree*. In relation to each of the statements, participants will be instructed to select the most appropriate response for him or herself with reference to the upcoming competition/race. Items for each of the two subscales will be summed together and then divided by the number of items within that

subscale (Rossato et al., 2018). A score for each of the two (i.e., threat, challenge) subscales will be used for statistical analysis in the present study.

Personality Characteristics

The personality characteristics of optimism and hardiness will be measured in this study through the use of two separate instruments. The Life Orientation Test-Revised (LOT-R; Scheier et al., 1994) is a revised edition of the Life Orientation Test (LOT; Scheier & Carver, 1992) and will be used to measure optimism in the present study. The LOT-R is a 10-item measure of optimism versus pessimism (Appendix I). The internal reliability (Cronbach's $\alpha = .78$) and test-retest reliability ($r = .68$ over a four week interval, $r = .60$ over a 12 months, $r = .56$ over 24 months, and $r = .79$ over 28 months) have both been shown to be adequate (Scheier et al., 1994).

Three items are described positively, measuring optimism (e.g., "I always look on the bright side of things.") Three items are described negatively, measuring pessimism (e.g., "If something can go wrong for me, it will.") The remaining 4 items are fillers, which are not scored. Participants will be asked to respond to each of the 10 items rating the extent of their agreement on a 5-point Likert scale: 0 = *strongly disagree,* 1 = *disagree, 2 = neutral,* 3 =*agree,* and 4 = *strongly agree* (Czech et al., 2002). The three negative items will be scored reverse before all items are added together to obtain a total optimism score. Higher scores indicate greater optimism. Total scores for the LOT-R can range anywhere between 0–24 (Haskell, 2008).

The Dispositional Resilience Scale-15 (DRS-15; Bartone, 2007) is a revised edition of the original 45-item (Bartone et al., 1989; Bartone, 1991) and will be used to measures the three components of hardiness: commitment, control, and challenge

(Appendix J). The DRS-15 has shown good internal consistency (Cronbach's α = .82) for the composite hardiness score as well as the three subscales (commitment = .77, control = .68, and challenge = .69; Bartone, 1999; Bartone et al., 2008). A 3-week test-retest coefficient of .78 for the composite hardiness score and corresponding .78 (commitment), .58 (control), and .81 (challenge) 3-week test-retest coefficients for the three subscales also indicates high reliability of the DRS-15.

The DRS-15 comprises five items within each of the three subscales for a total of 15 items. Statements such as, "I feel like my life is somewhat empty of meaning" (commitment), "How things go in life depends on my own actions" (control), and "Changes in routine are interesting to me" (challenge) exist within the DRS-15. The items are scored on a 4-point Likert scale: 0 = *not at all true*, 1 = *a little true*, 2 = *quite true* , 3 = *completely true*. Participants will be asked to check the box next to each item to indicate how much they believe each item is true. The sum of the 15 responses from each item will be the participants final hardiness score, which can range from 0 (low) to 45 (high). A higher score indicates higher levels of hardiness. A sum of each of the three subscales will also be determined, ranging from 0 (low) to 15 (high). Higher scores for any of the subscales indicate higher levels of hardiness in those subscales.

Resilience

The Connor-Davidson Resilience Scale-10 (CD-RISC-10; Campbell-Sills & Stein, 2007) is a revised edition of the original 25-Item Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) and will be used to measure resilience in the present study (Appendix K). The CD-RISC-10 has been reported to have good internal consistency and construct reliability (Cronbach's α = .85; Campbell-Sills &

Stein, 2007). Cronbach's α remained consistently between .84 and .86 when used as a tool within sport as well, further supporting the internal validity of the CD-RISC-10. Gonzalez and colleagues (2016) concluded in support with previous research (Burns & Anstey, 2010; Gucciardi et al., 2011) that the CD-RISC-10 is a valid and reliable instrument in the sport setting.

The CD-RISC-10 is a 10-item scale that measures one's ability to positively adapt to adversity. Participants will rate each of the items on a 5-point Likert scale. A participant responding with a 1 indicates that the item is "not true at all" and a participant responding with a 5 indicates that the item is "true nearly all the time." Example items include: "I am able to adapt when changes occur", "I can deal with whatever comes my way" and "I tend to bounce back after illness, injury, or other hardships" (Gucciardi et al., 2011). Scores from the CD-RISC-10 range from 0–40, in which higher scores indicate resilience (Madewell & Ponce-Garcia, 2016).

Data Analysis

All analyses will be conducted using IBM SPSS Statistics (Version 24). The descriptive statistics and distribution indicators will be calculated. All variables will be examined for normal distribution justifying the use of parametric statistics (i.e., skewness< 3, kurtosis < 10; Field, 2013). A Cronbach's α will be calculated for each subscale to demonstrate adequate internal consistency.

A multiple hierarchical regression analysis will be conducted for this study in order to assess the relationship between stressors, challenge appraisal, and personality characteristics (i.e., optimism, hardiness) with resilience in collegiate student-athletes. The dependent/outcome variable is resilience and the independent/predictor variables are

stressors, challenge appraisal, and personality characteristics (i.e., optimism, hardiness). To ensure multicollinearity does not impact the results, variance inflation (VIF) scores will be calculated (i.e., VIF < 10; Field, 2013).

PROPOSAL

REFERENCES

Angell, G.B., Dennis, B.G., & Dumain, L.E. (1998). Spirituality, resilience, and narrative: Coping with parental death. *Families In Society, 79*(6), 615–630.

Anthony, E. J. (1987). Risk, vulnerability and resilience: An overview. In E. J. Anthony & B. Kohler (Eds.), *The invulnerable child* (pp. 3–48). New York: Guildford Press.

Arnold, R. S., & Fletcher, D. (2012). A research synthesis and taxonomic classification of the organizational stressors encountered by sport performers. *Journal of Sport and Exercise Psychology, 34*, 397–429.

Baker, J., Côté, J., & Deakin, J. (2005). Cognitive characteristics of expert, middle of the pack, and back of the pack ultra-endurance triathletes. *Psychology of Sport and Exercise, 6*(5), 551–558.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*(9), 1175–1184.

Bartone, P. T. (1991). Development and validation of a short hardiness measure. *Paper presented at the annual convention of the American Psychological Society. Washington DC.*

Bartone, P. T. (1999). Hardiness protects against war-related stress in Army Reserve forces. *Consulting Psychology Journal: Practice and Research, 51*(2), 72–82.

Bartone, P. T. (2007). Test-retest reliability of the Dispositional Resilience Scale-15, a brief hardiness scale. *Psychological Reports*, *101*(3), 943–944.

Bartone, P. T., Ursano, R. J., Wright, K. M., & Ingraham, L. H. (1989). The impact of a military air disaster on the health of assistance workers: A prospective study. *Journal of Nervous & Mental Disease, 177,* 317-–328.

Bartone, P. T., Roland, R. R., Picano, J. J., & Williams, T. J. (2008). Psychological hardiness predicts success in US Army Special Forces candidates. *International Journal of Selection and Assessment, 16*(1), 78–81.

Bateman, T. S., & Crant, M. J. (1993). The proactive component of organizational behavior: A measure and correlates. *Journal of Organizational Behavior, 14*(2), 103–118.

Bogar, C. B., & Hulse-Killacky, D. (2006). Resiliency determinants and resiliency processes among female adult survivors of childhood sexual abuse. *Journal of Counseling and Development, 84*(3)*,* 318–327.

Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59*(1), 20–28.

Brown, H. E., Lafferty, M. E., & Triggs, C. (2015). In the face of adversity: Resiliency in winter sport athletes. *Science & Sports, 30*(5), 105–117.

Burns, R. A., & Anstey, K. J. (2010). The Connor-Davidson Resilience Scale (CD-RISC): Testing the invariance of a unidimensional resilience measure that is independent of positive and negative affect. *Personality and Individual Differences, 48*(5), 527–531.

Butt, J., Weinberg, R., & Culp, B. (2010). Exploring mental toughness in NCAA athletes. *Journal of Intercollegiate Sport*, *3*(2), 316–332.

Campbell-Sills, L., Cohan, S. L., & Stein, M. B. (2006). Relationship of resilience to personality, coping, and psychiatric symptoms in young adults. *Behaviour Research and Therapy*, *44*(4), 585–599.

Campbell-Sills, L., & Stein, M. B. (2007). Psychometric analysis and refinement of the Connor-Davidson Resilience Scale (CD-RISC): Validation of a 10-item measure of resilience. *Journal of Traumatic Stress, 20*(6), 1019–1028.

Carver, C. S., Scheier, M. F., & Segerstrom, S. C. (2010). Optimism. *Clinical psychology review*, *30*(7), 879–889.

Centers for Disease Control and Prevention (CDC). About behavioral risk factor surveillance system ACE data. www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/ace-brfss.html. Updated 2019. Accessed January 15, 2020.

Chyi, T., Lu, F., Wang, E. T. W., Hsu, Y., & Chang, K. (2018). Prediction of life stress on athletes' burnout: The dual role of perceived stress. *Peer Reviewed Journal, 6*, 1–14.

Coffee, P., & Rees, T. (2011). When the chips are down: Effects of attributional feedback on self-efficacy and task-performance following initial and repeated failure. *Journal of Sports Sciences, 29*(3), 235–245.

Coffee, P., Rees, T., & Haslam, A. (2009). Bouncing back from failure: The interactive impact of perceived controllability and stability on self-efficacy beliefs and future task performance. *Journal of Sports Sciences, 27*(11), 1117–1124.

Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety, 18*(2), 76–82.

Czech, D., Burke, K., Joyner, A., & Hardy, C. (2002). An exploratory investigation of optimism, pessimism and sport orientation among NCAA Division I college athletes. *International Sports Journal, 6*(2), 136–145.

DeFreese, J. D., & Smith, A. L. (2013). Teammate social support, burnout, and self-determined motivation in collegiate athletes. *Psychology of Sport and Exercise, 14*(2), 258–265.

Egeland, B., Carlson, E., & Sroufe, L. A. (1993). Resilience as process. *Development and Psychopathology, 5*(4), 517–528.

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Apitz, A. M., Edwards, et al. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine, 14*(4)*,* 245–258.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Thousand Oaks, CA: Sage Publications.

Flach, F. F. (1988). *Resilience: Discovering new strength at times* of *stress.* New York: Ballantine Books.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist, 34*(10), 906–911.

Fletcher, D., Hanton, S., & Mellalieu, S. D. (2006). An organizational stress review: Conceptual and theoretical issues in competitive sport. In S. Hanton, & S. D.

Mellalieu (Eds.), *Literature reviews in sport psychology* (pp. 321–374). Hauppauge, NY: Nova Science.

Fletcher, D., & Sarkar, M. (2012). A grounded theory of psychological resilience in Olympic champions. *Psychology of Sport and Exercise*, *13*(5), 669–678.

Fletcher, D., & Sarkar, M. (2013). Psychological resilience: A review and critique of definitions, concepts and theory. *European Psychologist, 18*(1), 12–23.

Fletcher, D., & Sarkar, M. (2016). Mental fortitude training: An evidence-based approach to developing psychological resilience for sustained success. *Journal of Sport Psychology in Action, 7*(3), 135–157.

Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promise. *Annual Review of Psychology, 55*, 745–774.

Ford, I. W., Eklund, R. C., & Gordon, S. (2000). An examination of psychosocial variables moderating the relationship between life stress and injury time-loss among athletes of a high standard. *Journal of Sports Sciences, 18*(5)*,* 301–312.

Galli, N., & Gonzalez, S. P. (2015). Psychological resilience in sport: A review of the literature and implications for research and practice. *International Journal of Sport and Exercise Psychology*, *13*(3), 243–257.

Galli, N., & Vealey, R. S. (2008). "Bouncing back" from adversity: Athletes' experiences of resilience. *The Sport Psychologist, 22*(3), 316–335.

Garmezy, N. (1991). Resiliency and vulnerability to adverse developmental outcomes associated with poverty. *American Behavioral Scientist*, *34*(4), 416–430.

Gaudreau, P. & Blondin, J. P. (2004). Differential associations of dispositional optimism and pessimism with coping, goal attainment, and emotional adjustment during sport competition. *International Journal of Stress Management, 11*(3), 245–269.

Gonzalez, S. P., Moore, E. W. G., Newton, M., & Galli, N. A. (2016). Validity and reliability of the Connor-Davidson Resilience Scale (CD-RISC) in competitive sport. *Psychology of Sport and Exercise*, *23*, 31–39.

Goss, J. (1994). Hardiness and mood disturbances in swimmers while overtraining. *Journal of Sport and Exercise Psychology, 16*(2)*,* 135–149.

Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology, 14*(3), 172–204.

Gould, D., Jackson, S. A., & Finch, L. M. (1993). Sources of stress in national champion figure skaters. *Journal of Sport and Exercise Psychology, 15*(2), 134–159.

Gould, D., & Maynard, I. (2009). Psychological preparation for the Olympic Games. *Journal of Sports Sciences, 27*(13), 1393–1408.

Greeff, A. P, & Human, B. (2004). Resilience in families in which a parent has died. *The American Journal of Family Therapy, 32*(1), 27–42.

Greenleaf, C., Gould, D., & Dieffenbach, K. (2001). Factors influencing Olympic performance: Interviews with Atlanta and Nagano US Olympians. *Journal of Applied Sport Psychology, 13*(2), 154–184.

Grove, R. J., & Heard, P. N. (1997). Optimism and sport confidence as correlates of slump-related coping among athletes. *The Sport Psychologist, 11*(4), 400–410.

Gu, Q., & Day, C. (2007). Teachers' resilience: A necessary condition for effectiveness. *Teaching and Teacher Education, 23*(8), 1302–1316.

Gucciardi, D. F., Jackson, B., Coulter, T. J., & Mallett, C. J. (2011). The Connor-Davidson Resilience Scale (CD-RISC): Dimensionality and age-related measurement invariance with Australian cricketers. *Psychology of Sport and Exercise, 12*(4), 423–433.

Hanton, S., Fletcher, D., & Coughlan, G. (2005). Stress in elite sport performers: A comparative study of competitive and organizational stressors. *Journal of Sports Sciences, 23*(10), 1129–1141.

Hardy, L., Jones, G., & Gould, D. (1996). *Understanding psychological preparation for sport: Theory and practice of elite performers*. Chichester, UK: Wiley.

Haskell, B. C. (2008). The effects of optimism, coping strategies, and the sport team environment on college athlete adjustment (Master Thesis). Disponível na base de dados de Teses e Dissertações ProQuest (UMI Number: 1453397).

Hays, K., Thomas, O., Maynard, I., & Bawden, M. (2009). The role of confidence in world-class sport performance. *Journal of Sports Sciences, 27*(11), 1185–1199.

He, F., Cao, R., Feng, Z., Guan, H., & Peng, J. (2013) The impacts of dispositional optimism and psychological resilience on the subjective well-being of burn patients: A structural equation modelling analysis. *PLoS ONE 8*(12), 1–5.

Hill, Y., Den Hartigh, R. J. R., Meijer, R. R., De Jonge, P., & Van Yperen, N. W. (2018). Resilience in sports from a dynamical perspective. *Sport, Exercise, and Performance Psychology*, *7*(4), 333–341.

Holt, N. L., & Hogg, J. M. (2002). Perceptions of stress and coping during preparations for the 1999 women's soccer World Cup finals. *The Sport Psychologist, 16*(3), 251–271.

Horton, T. V., & Wallander, J. L. (2001). Hope and social support as resilience factors against psychological distress of mothers who care for children with chronic physical conditions. *Rehabilitation Psychology, 46*(4), 382–399.

James, B., & Collins, D. (1997). Self-presentational sources of competitive stress during performance. *Journal of Sport and Exercise Psychology, 19*(1), 17–35.

Judkins, S. K., & Rind, R. (2005). Hardiness, stress, and job satisfaction among home care nurses. *Home Health Care Management and Practice, 17*(2), 113–118.

Kleiman, E. M., Liu, R. T., & Riskind, J. H. (2013). Enhancing attributional style as a resiliency factor in depressogenic stress generation. *Anxiety, Stress, & Coping, 26*(4), 467–474.

Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study. *Journal of Personality and Social Psychology, 42*(1), 168–177.

Kobasa, S. C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology, 37*(1), 1–11.

Krane, V., & Williams, J. M. (2006). Psychological characteristics of peak performance. In J. M. Williams (Ed.), *Applied sport psychology: Personal growth to peak performance* (pp. 207–227). Boston: McGraw-Hill.

Kelley, B. C. (1994). A model of stress and burnout in collegiate coaches: Effects of gender and time of season. *Research Quarterly for Exercise and Sport, 65*(1)*,* 48–58.

Lamond, A. J., Depp, C. A., Allison, M., Langer, R., Reichstadt, J., Moore, D. J., . . . Jeste, D. V. (2008). Measurement and predictors of resilience among community dwelling older women. *Journal of Psychiatric Research, 43*(2), 148–154.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.

Lee, H. S., Brown, S. L., Mitchell, M. M., & Schiraldi, G. R. (2008). Correlates of resilience in the face of adversity for Korean women immigrating to the US. *Journal of Immigrant and Minority Health, 10*(5), 415–422.

Lifton, D., Seay, S., & Bushke, A. (2000). Can student hardiness serve as an indicator of likely persistence to graduation? Baseline results from a longitudinal study. *Academic Exchange Quarterly, 4*(2)*,* 73–81.

Lu, F. J. H., Hsu, Y. W., Chan, Y. S., Cheen, J. R., & Kao, K. T. (2012). Assessing college student-athletes' life stress: Initial measurement development and validation. *Measurement in Physical Education and Exercise Science, 16*(4), 254–267.

Lu, F. J. H., Lee, W. P., Chang, Y.-K., Chou, C.-C., Hsu, Y.-W., Lin, J.-H., & Gill, D. L. (2016). Interaction of athletes' resilience and coaches' social support on the stress-burnout relationship: A conjunctive moderation perspective. *Psychology of Sport and Exercise*, *22*, 202–209.

Luthar, S. S. & Cicchetti, D. (2000). The construct of resilience: Implications for interventions and social policies. *Development & Psychopathology, 12*(4), 857–885.

Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 71*(3), 543–562.

Luthar, S. S., & Zelazo, L. B. (2003). Research on resilience: An integrative review. In S. S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp. 510–549). New York, NY: Cambridge University Press.

Machida, M., Irwin, B., & Feltz, D. (2013). Resilience in competitive athletes with spinal cord injury: The role of sport participation. *Qualitative Health Research, 23*(1), 1054–1065.

Maddi, S. R. (2006). Hardiness: The courage to grow from stresses. *The Journal of Positive Psychology, 1*(3)*,* 1–9.

Madewell, A. N. & Ponce-Garcia, E. (2016). Assessing resilience in emerging adulthood: The Resilience Scale (RS), Connor–Davidson Resilience Scale (CD-RISC), and Scale of Protective Factors (SPF). *Personality and Individividual Differences, 97*, 249–255.

Mallett, C. J., & Hanrahan, S. J. (2004). Elite athletes: Why does the 'fire' burn so brightly*? Psychology of Sport and Exercise, 5*(2), 183–200.

Martin-Kruum, C. P., Sarrazin, P. G., Peterson, C., & Famose, J.-P. (2003). Explanatory style and resilience after sports failure. *Personality and Individual Differences, 35*(7), 1685–1695.

McKay, J., Niven, A. G., Lavallee, D., & White, A. (2008). Sources of strain among elite UK track athletes. *The Sport Psychologist, 22*(2), 143–163.

Mellalieu, S. D., Neil, R., Hanton, S., & Fletcher, D. (2009). Competition stress in sport performers: Stressors experienced in the competition environment. *Journal of Sports Sciences, 27*(7), 729–744.

Mummery, W. K., Schofield, G., & Perry, C. (2004). Bouncing back: The role of coping style, social support and self-concept in resilience of sport performance. *Athletic Insight, 6*(3)*,* 1–18.

Neil, R., Hanton, S., Mellalieu, S. D., & Fletcher, D. (2011). Competition stress and emotions in sport performers: The role of further appraisals. *Psychology of Sport and Exercise, 12*(4), 460–470.

Nezhad, M. A. S., & Besharat, M. A. (2010). Relations of resilience and hardiness with sport achievement and mental health in a sample of athletes. *Procedia- Social and Behavioral Sciences*, *5*(2), 757–763.

Noblet, A. J., & Gifford, S. M. (2002). The sources of stress experienced by professional Australian footballers. *Journal of Applied Sport Psychology, 14*(1), 1–13.

Richardson, G. E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, *58*(3), 307–321.

Richardson, G. E., Neiger, B. L., Jensen, S., & Kumpfer, K. L. (1990). The Resiliency Model. *Health Education, 21*(6)*,* 33–39.

Roberts, B. W. (2009). Back to the future: Personality and assessment and personality development. *Journal of Research in Personality, 43*(2), 137–145.

Rossato, C. J. L., Uphill, M. A., Swain, J., & Coleman, D. A. (2018). The development and preliminary validation of the Challenge and Threat in Sport (CAT- Sport) Scale, *International Journal of Sport and Exercise Psychology, 16*(2), 164–177.

Rutter, M. (1985). Resilience in the face of adversity: Protective factors and resistance to psychiatric disorder. *British Journal of Psychiatry, 147*(6), 598–611.

Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry, 57*(3), 316–331.

Rutter, M. (1990). Competence under stress: Risk and protective factors. In J. Rolf, A. S. Masten, D. Cicchetti, K. H. Nuechterlin, & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 181–214). New York City, NY: Cambridge University Press.

Sarkar, M., & Fletcher, D. (2013). How should we measure psychological resilience in sport performers? *Measurement in Physical Education and Exercise Science*, *17*(4), 264–280.

Sarkar, M., & Fletcher, D. (2014). Psychological resilience in sport performers: A review of stressors and protective factors. *Journal of Sports Sciences, 32*(15), 1419–1434.

Scanlan, T. K., Stein, G. L., & Ravizza, K. (1991). An in-depth study of former elite figure skaters: III. Sources of stress. *Journal of Sport and Exercise Psychology, 13*(2), 103–120.

Scheier, M.F. & Carver, C.S. (1992) Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research, 16*(2), 201–228.

Scheier, M., Carver, C., & Bridges, M. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*(6), 1063–1078.

Sheard, M. (2009). Hardiness commitment, gender, and age differentiate university academic performance. *British Journal of Educational Psychology, 79*(1)*,* 189–204.

Sheard, M., & Golby, J. (2007). Hardiness and undergraduate study: The moderating role of commitment. Pers*onality and Individual Differences, 43*(3)*,* 579–588.

Souri, H. & Hasanirad, T. (2011). Relationship between resilience, optimism, and psychological well-being in students of medicine. *Procedia- Social and Behavioral Sciences, 30*, 1541–1544.

Thelwell, R. C., Weston, N. J. V., & Greenlees, I. A. (2007). Batting on a sticky wicket: Identifying sources of stress and associated coping strategies for professional cricket batsmen. *Psychology of Sport and Exercise, 8*, 219–232.

Vealey, R. S. (1986). Conceptualization of sport-confidence and competitive orientation: Preliminary investigation and instrument development. *Journal of Sport and Exercise Psychology, 8*(2), 221–246.

Werner, E. E. (1982). Vulnerable but invincible: A longitudinal study of resilient children and youth. New York: McGraw-Hill.

Werner, E. E., & Smith, R. S. (1992). *Overcoming the odds: High risk children from birth to adulthood.* Ithaca, NY: Cornell University Press 1992.

Weston, J. V., Thelwell, R. C. Bond, S., & Hutchings, N. V. (2009). Stress and coping in single-handed round-the-world ocean sailing. *Journal of Applied Sport Psychology, 21*(4), 460–474.

Wilson, G. S., Raglin, J. S., & Pritchard, M. E. (2002). Optimism, pessimism, and precompetition anxiety in college athletes. *Personality and Individual Differences, 32*(5)*,* 893–902.

RESEARCH MANUSCRIPT

INTRODUCTION

Sport performers in athletic settings unavoidably endure significant adversity, stressors, and failures, both physically and psychologically (Galli & Gonzalez, 2015). An example of experiencing the ups and downs of elite competition are represented when reflecting back on American swimmer Pablo Morales' Olympic career and North Carolina State's Track superstar Kathy Love Ormsby's college career. Morales participated and won three medals in the 1984 Olympic games in Los Angeles, but failed to win a fourth, as he was upset in the 100-meter butterfly final. When the next Olympic games approached four years later, Morales failed to qualify for the team, and retired shortly after. However, he came back out of retirement to make the U.S. Olympic team and competed in the 1992 Olympic games in Barcelona. He went on to win a gold medal for the 100-meter butterfly. Kathy Love Ormsby was favored to win the 10,000-meter race at the NCAA track meet in 1986. However, she failed to maintain her pace and fell to fourth place with less than nine laps left in the championship race. Ormsby ran off in the middle of the race from the track, beyond the stands and disappeared. She was later found underneath a bridge. She jumped off in an attempt to end her life (Mummery et al., 2004).

These two stories were examples of two elite athletes in situations within their athletic environments that lead to two extremely different responses. Pablo Morales was able to recover from his failure, while Kathy Love Ormsby felt her failure was too much to live through. It is clear that failure can be motivating or disruptive depending on how

an individual perceives their circumstances. The response to adversity, also termed resilience, may be an important factor underlying the differences in behavior between Morales and Ormsby (Anthony, 1987; Mummery et al., 2004).

Resilience

The terms "resilient, resilience, and resiliency" have often been used by coaches and the media to describe athletes that are able to endure, or even thrive on, the demanding situations they encounter (Galli & Vealey, 2008). The definition of resilience commonly used within the context of sport is "the role of mental processes and behavior in promoting personal assets and protecting an individual from the potential negative effect of stressors" (Fletcher & Sarkar, 2012, p. 675). It serves as a moderator variable that provides an understanding for why one individual may experience a variety of negative symptoms after experiencing an objectively minor event when another individual may not experience any negative symptoms at all after facing apparent extreme distress (Mummery et al., 2004). In order for resilience to be demonstrated two key components must be present: stressors or adversity and positive adaptation (Fletcher & Sarkar, 2013).

Stressors

Adversity encompasses negative life circumstances that are found to be associated with adjustment difficulties (Luthar & Cicchetti, 2000). Adversity has been found to exist as several more commonly experienced events that each have an impact, or as one single event resulting in a significant impact (Luthar & Cicchetti, 2000; Sarkar & Fletcher, 2014). To encompass all adverse events one experiences, including both significant life events and ongoing daily challenges, the more neutral term "stressors" is used (Fletcher

& Sarkar, 2013; Fletcher et al., 2006). Stressors have been defined as "the environmental demands (i.e., stimuli) encountered by an individual" (Fletcher et al., 2006, p. 359). For a student-athlete, stressors can be multifold (e.g., personal factors outside of their sport, competition within their sport, organizational demands in which the student-athlete competes). Student-athletes are likely experiencing multiple stressors at once, considering they may be experiencing adversity both in their personal lives (general life stress), as well as their competitive and organizational sporting lives (sport-specific life stress).

Personal stressors are those experienced in relation to personal "non-sporting" events that take place in a student-athlete's life (Sarkar & Fletcher, 2014). Within this category, three primary stressors are identified in previous research: work-life balance, family issues, and the death of a significant other. Student-athletes in the early stages of their careers struggle with balancing academics and/or personal relationships with their sport (McKay et al., 2008). Family issues, more specifically, include problems within personal relationships (Gould et al., 1993), family responsibilities (Weston et al., 2009), and an unstable home life (Scanlan et al., 1991). Lastly, the unfortunate death of a significant other such as a family member (McKay et al., 2008), or a teammate (Scanlan et al., 1991) has been found to have a drastic impact on an athlete (Sarkar & Fletcher, 2014).

Based on a collection of previous sport research (Gould et al., 1993; Holt & Hogg, 2002; James & Collins, 1997; Hanton et al., 2005; Mellalieu et al., 2009; Neil et al., 2011) the most common sport-specific stressors resulting from competition include preparation, injury, pressure, underperforming, expectations, self-presentation, and

rivalry. In addition, sport-specific stressors resulting from the organization in which the individual is involved are within the categories of leadership and personal issues, cultural and team issues, logistical and environmental issues, and performance and personal issues within their sport (Fletcher et al., 2006; Arnold & Fletcher, 2012). Previous sports resilience research using The Resiliency Theory (See Figure 1; Richardson et al., 1990) and The Conceptual Model of Sport Resilience (See Figure 2; Galli & Vealey, 2008) supports the fact that although athletes experience negative psychological effects following adversity, they may also gain protective factors in the process and ultimately grow from the experience allowing them to positively adapt to adversity more effectively in the future. However, limited research has been conducted on how much the stressors experienced by collegiate student-athletes specifically predict whether or not they are resilient.

Adversity also exists as one or more significant life events that have the potential to impact an individual. More specifically, children who have experienced adversity in the form of abuse, household challenges, and/or neglect before their eighteenth birthday are known to have had adverse childhood experiences, or ACEs (Centers for Disease Control and Prevention [CDC], 2019; Felitti et al., 1998). ACEs heavily correlate with long term, negative effects on health, opportunity, and well-being through adulthood, more specifically, chronic health diseases, substance misuse, and mental illness (CDC, 2019; Felitti et al., 1998). However, there is an absence of research on the prevalence of ACEs within student-athlete populations or their influence on the ability of a student-athlete to positively adapt following adversity.

Regardless of all of the stressors (general life, sport specific) and potential ACEs a student-athlete may have experienced, student-athletes are still expected to positively adapt to maintain high sport performance (Sarkar & Fletcher, 2014). Positive adaptation is when one adapts substantially better than what would be expected given the severity of the circumstances (Luthar & Zelazo, 2003). Positive adaptation is influenced by protective factors, which Rutter (1985) defined as "influences that modify, ameliorate, or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome" (p. 600). Extraversion and conscientiousness (Campbell-Sills et al., 2006), hope and social support (Horton & Wallander, 2001), self-efficacy (Gu & Day, 2007), hardiness (Bonanno, 2004), and enhanced attributional style (Kleiman et al., 2013) were examples of protective factors previously identified in resilient adults. For children who have ACEs, researchers found that having a supportive environment inside and outside of the house, a good self-esteem, and an easy temperament serve as protective factors (Garmezy, 1991; Rutter, 1990; Werner & Smith, 1992). Specific protective factors for elite athletes have previously been identified in Fletcher and Sarkar's (2012) grounded theory.

The most recent resilience research in individual sport performers was a grounded theory approach employed by Fletcher and Sarkar (2012) on the responses from successful gold medal Olympians (See Figure 3). From this study, Fletcher and Sarkar (2012) concluded five psychological experiences relating to a positive personality, motivation, confidence, focus, and perceived social support were all significant in promoting a facilitative response for athletes. These five factors (i.e., positive personality, motivation, confidence, focus, perceived social support) served as protective factors from

the potentially negative consequences of facing stressors by positively influencing their challenge appraisal and meta-cognitions (Galli & Gonzalez, 2015). These cognitive reactions produced ideal facilitative responses, ultimately resulting in optimal sport performance (Fletcher & Sarkar, 2012; Galli & Gonzalez, 2015). One specific component of Fletcher and Sarkar's (2012) grounded theory was the role of positive personality characteristics. Positive personality characteristics were one of the five psychological factors determined to have an impact on the challenge appraisal of Olympic champions and ultimately lead to facilitative responses (i.e., resilience). However, this evidence was derived from a very small, specialized sample of 12 Olympic champions, which may decrease the applicability of Fletcher and Sarkar's (2012) findings.

Challenge Appraisal

Challenge appraisal occurs when an athlete views an event or circumstance as something that is relevant to the achievement of their goals, and believes they have the means to handle those demands (Lazarus & Folkman, 1984). The athletes in Fletcher and Sarkar's (2012) study were appraising their hardest challenges as opportunities for personal growth, development, and mastery. They believed the stressors they encountered allowed them to foster a psychological and competitive edge over their opponents. Throughout their careers, if they were not chosen for an international competition, they knew they needed to work harder, and losing competitions were seen as learning experiences for competitions in the future. These findings highlight how important elite athlete's appraisal is and suggest that the process of challenge appraisal is an important component illustrating the relationship between psychological resilience and optimal sport performance. However, challenge appraisal has yet to be investigated in the college

student-athlete population to determine its predictability towards resilience. The participants in Fletcher and Sarkar's (2012) study appraised stressors as opportunities to improve and grow because they were able to optimize five psychological factors, one of which was a positive personality (Fletcher & Sarkar, 2012).

Personality Characteristics

Various positive personality characteristics, such as being open to new experiences, extraversion, proactiveness, optimism, innovative, consciousness, and emotionally stable were possessed by the Olympic champions and served as protective factors in Fletcher and Sarkar's (2012) study. Two of the positive personality traits highlighted in sport resilience literature, in addition to Fletcher and Sarkar's (2012) findings, were optimism and hardiness. Referring back to Morales's career, his proactive and optimistic personality may have been one of the many factors that had driven him to his ultimate success (Mummery et al., 2004). Lee and colleagues (2008) defined optimism as "the tendency to believe that one will generally experience good outcomes in life" (p. 417). Although optimism within Fletcher and Sarkar's (2012) grounded theory was labeled as a characteristic within the five psychological factors that lead to an optimal performance outcome, optimism has been found to be relevant in research as a predictor variable as well. A meta-analysis identified several relevant factors related to resilience and found that the largest effect was attributed to protective factors such as optimism (Lee et al., 2013). Optimism has been identified as a predictor of resilience in specific populations, such as aging women (Lamond et al., 2008), medical students (Souri & Hasanirad, 2011), and burn patients (He et al., 2013). In sport, optimism predicted lower levels of precompetition anxiety (Wilson et al., 2002) and greater ability to adjust

emotions during sport competition (Gaudreau & Blondin, 2004). There has also been a variety of research relating optimism with explanatory style, revealing that those who have an optimistic explanatory style are more likely to positively adapt after experiencing adversity (Coffee & Rees, 2011; Coffee et al., 2009; Martin-Krumm et al., 2003). However, research investigating optimism as a predictor of resilience in the collegiate student-athlete population is limited.

A growing body of research suggests hardiness is a combination of three personality dispositions (commitment, control, challenge) that function together to resist the potential negative impact of the stressors one faces (Kobasa et al., 1982). The first dimension, commitment, is displayed in individuals who have the "ability to feel deeply involved in or committed to the activities of their lives" (Kobasa, 1979, p. 3). The second dimension, control, is displayed by individuals that believed they were able to control or have at least some influence on the experiences that took place in their lives (Kobasa, 1979). Lastly, the third dimension, challenge, is displayed in individuals who feel positive about their lives and all of the changes within it because they appraise challenges as stimulating rather than threatening (Maddi, 2006). The challenge dimension within hardiness is similar to Fletcher and Sarkar's (2012) grounded theory approach, in which it was determined that the greatest athletes in the world appraised challenges as opportunities for personal growth, development, and mastery.

Hardiness has been reported to be significant in registered nurses reporting decreased stress levels and increased job satisfaction levels (Judkins & Rind, 2005), and college students showing a greater likelihood of completing their academic courses at their institution (Lifton et al., 2000) and achieving superior final degree classification at

graduation (Sheard, 2009; Sheard & Golby, 2007). Psychological hardiness was also found to be a significant predictor of success in individuals completing an Army Special Forces candidate school (Bartone et al., 2008). In sport, greater hardiness scores have indicated an increased ability to cope more effectively with adversities in football players (Goss, 1994; Kelley, 1994) and are related to decreased injury time-loss in high-level athletes (Ford et al, 2000). In a study that investigated the relationship of resilience and hardiness with sport achievement and mental health, results revealed a positive relationship of resilience and hardiness with sport achievement and psychological well-being and a negative relationship with psychological distress which predicted the variations related to sport achievement & psychological well-being and distress in athletes (Nezhad & Besharat, 2010). However, research investigating hardiness as a predictor of resilience in the collegiate student-athlete population is limited. In addition, research investigating the positive personality characteristics of both optimism and hardiness as predictors of resilience in collegiate student-athletes is non-existent.

Purpose

As shown in Fletcher and Sarkar's (2012) grounded theory approach model, as an individual encountered stressors, positive personality served as a protective factor from the potentially negative consequences of the stressors by positively influencing that individuals' challenge appraisal (Galli & Gonzalez, 2015). Appraising stressors as challenging produced ideal facilitative responses (i.e., resilience) in elite Olympic champions. However, conclusions drawn from the 12 Olympic champions in Fletcher and Sarkar's (2012) study were not generalizable to all athletes. In addition, Fletcher and Sarkar's (2012) study, along with most previous sport psychology literature on resilience,

was collected via interview transcription. To date, there is an absence of quantitative investigations on the relationship between collegiate student-athlete stressors and adverse childhood experiences, challenge appraisal, positive personality characteristics, and resilience in sport. Therefore, the purpose of the present study is to examine the relationships between stressors, challenge appraisal, and personality characteristics (i.e., optimism, hardiness) with resilience in collegiate student-athletes.

METHODS

Participants

A total of 138 undergraduate NCAA student-athletes (first year; *n* = 43, 31.4%, sophomore; *n* = 34, 24.8%, junior; *n* = 38, 27.7%, senior; *n* = 22, 16.1%) participated in the present study. The sample included male (*n* = 78, 56.5%), female (*n* = 58, 42.0%), transgender (*n* = 1, .7%), and non-binary (*n* = 1, .7%) participants in the age range of 18 to 22 (M_{Age} = 19.9, SD_{Age} = 1.17). Sexual orientation as reported by the participants included heterosexual (*n* = 123, 89.1%), homosexual (*n* =7, 5.1%), bisexual (*n* = 6, 4.3%), and prefer not to say (*n* = 2, 1.4%).

All participants competed at the Division III level, and spanned a variety of sports including: football (*n* = 29, 21.2%), lacrosse (*n* = 17, 12.4%), swimming and diving (*n* = 17, 12.4%), basketball (*n* = 13, 9.5%), rowing (*n* = 10, 7.3%), volleyball (*n* = 10, 7.3%), baseball (*n* = 7, 5.1%), soccer (*n* = 7, 5.1%), field hockey (*n* = 5, 3.6%), track and field (*n* = 4, 2.9%), gymnastics (*n* = 3, 2.2%), golf (*n* = 2, 1.5%), and rugby (*n* = 1, .7%). Multi-sport athletes (*n* = 12, 8.8%) also participated in the present study. At the time the survey was completed, participants reported being in-season (*n* = 35, 25.4%), in the post-season (*n* = 24, 17.4%), or in the off-season (*n* = 79, 57.2%) of their intercollegiate sport. Also,

at the time the survey was completed, researchers and participants were in the midst of a global pandemic, COVID-19. The remainder of their school years transitioned to remote learning and the remainder of all sport seasons were cancelled due to this pandemic.

Procedures

After receiving Institutional Review Board (IRB) approval from the relevant institution, participant recruitment began. Varsity sport coaches of two NCAA DIII intercollegiate institutions in the Northeast region of the United States were contacted via email by the researcher. This email contained the information about the current study and requested the varsity sport coaches' student-athlete's participation in the present study. If coaches were interested in allowing their student-athletes to participate, it was requested that they forward an email to the student-athletes on their team. Once the student-athletes received this email from their coaches, they were able to access a link to an anonymous electronic survey. The electronic survey began with an implied consent form, then instructed the student-athletes to complete a series of questionnaires to the best of their ability. All participation was voluntary, and participants were aware they could discontinue participation at any time if necessary. After completion of the survey, participants could not withdraw because there was no way for the researchers to identify which survey belonged to a participant.

Measures

Stressors

To inquire about all adverse events on a spectrum of relevance from life, sport, and from participant's childhood, two different scales were used in this study. First, to assess the specific stressors within a collegiate student-athlete's life, the College Student-

Athlete's Life Stress Scale (CSALSS; Lu et al., 2012) was used. The CSALSS is a 24-item scale used to assess college student-athletes' perceptions of their daily stressors in their sport and in their general life (Lu et al., 2016; Appendix F). Each of the 24 items represents a statement that describes something that had the potential to negatively impact their daily life as a collegiate student-athlete. For example, "I worry about my unstable competitive performance" is one of the sport-specific stress items on the scale within the performance demand subscale. Participants responded to each of the items on a 6-point Likert scale indicating how often they experience it: 1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *quite often*, 5 = *very often*, and 6 = *always* (Lu et al., 2012).

This scale consists of eight subscales: (a) sports injury, (b) performance demand, (c) coach relationships, (d) training adaptations, (e) interpersonal relationships, (f) romantic relationships, (g) family relationships, and (h) academic requirements (Lu et al., 2012). Previously the Cronbach's α for these eight subscales (.66–.87) and the reliability for all items (.86–.93) have both been shown to be adequate (Chyi et al., 2017; Lu et al., 2016; Lu et al., 2012). The Cronbach's α for the eight subscales in the present study were also shown to be low to adequate (.58–.85). The training adaptation subscale was determined to have the lowest internal consistency (α = .58) and the coach relationship subscale was determined to have the highest internal consistency (α = .85) in the present study.

For the purpose of the current study, the eight subscales were categorized into two sets of four subscales representing both general-life stress and sport-specific life stress. The four subscales of interpersonal relationships, romantic relationships, family relationships, and academic requirements were categorized as general-life stress. The

remaining four subscales of sports injury, performance demand, coach relationships, and training adaptations were categorized as sport-specific life stress (Chyi et al., 2017). Two composite scores for general-life stress and sport-specific life stress were used for statistical analysis.

The second scale used in the present study to assess stressors in collegiate-student athletes before their eighteenth birthday was the Adverse Childhood Experiences (ACEs) Questionnaire (Felitti et al., 1998). This questionnaire consists of 10 questions relating to three different categories (abuse, household challenges, neglect) of potentially traumatizing events in an individual's childhood (Appendix G). Three questions address abuse (emotional, physical, sexual), five questions address household challenges (mother treated violently, substance abuse, mental illness, parental separation/divorce, incarcerated household family member), and two questions address neglect (emotional, physical) during childhood. Participants were asked if they had experienced any of the 10 items while they were growing up, during their first 18 years of life, and were instructed to report either "yes," "no," or "prefer not to answer." Each "yes" response represented one ACE. ACE scores ranged from 0 (no exposure to ACEs) to 10 (exposed to all ACEs). The greater ACE score one has, the greater the risk one has of developing health related issues throughout their adulthood. The total ACE score for each participant was used for statistical analysis.

Challenge Appraisal

Challenge appraisal was measured using the Challenge and Threat in Sport Scale (CAT-Sport Scale; Rossato et al., 2018). The CAT-Sport Scale is a 12-item sport-specific scale used to measure athlete's experiences of the two factors of challenge and threat

(Appendix H). The CAT-Sport Scale has been shown to have good levels of internal consistency for both threat (α = .90) and challenge (α = .83). The current study supported the adequacy of internal consistency for both threat (α = .89) and challenge (α = .84).

Of the 12 items in the CAT-Sport Scale, seven items were within the threat subscale and five were within the challenge subscale. Statements such as, "I am concerned what other people will think of me" (threat), and "I am looking forward to the rewards and benefits of success" (challenge) exist within the CAT-Sport Scale. The items are assessed on a 6-point Likert scale: 1 = *totally disagree*, 2 = *rather disagree*, 3 = *disagree to some extent*, 4 = *agree to some exten*t, 5 = *rather agree*, 6 = *totally agree*. In relation to each of the statements, participants were instructed to select the most appropriate response for him or herself with reference to the upcoming competition/race. Items for each of the two subscales were summed together and then divided by the number of items within that subscale (Rossato et al., 2018). A score for each of the two (i.e., threat, challenge) subscales were used for statistical analysis in the present study.

Personality Characteristics

Optimism

Two personality characteristics were examined by the researchers in the present study. The personality characteristic of optimism was measured using the Life Orientation Test-Revised (LOT-R; Scheier et al., 1994) adapted from the original Life Orientation Test (LOT; Scheier & Carver, 1992). The LOT-R is a 10-item measure of optimism versus pessimism (Appendix I). The internal reliability (α = .78) and test-retest reliability (*r* = .68 over a four-week interval, *r* = .60 over a 12 months, *r* = .56 over 24

months, and r = .79 over 28 months) have both been shown to be adequate (Scheier et al., 1994). The present study supported the adequacy of internal consistency (α = .77).

Three items are described positively, which measured optimism (e.g., "I always look on the bright side of things.") Three items are described negatively, which measured pessimism (e.g., "If something can go wrong for me, it will.") The remaining 4 items serve as fillers and were not scored. Participants responded to each of the 10 items rating the extent of their agreement on a 5-point Likert scale: 0 = *strongly disagree,* 1 = *disagree, 2 = neutral,* 3 =*agree,* and 4 = *strongly agree* (Czech, Burke, Joyner, & Hardy, 2002). The three negative items were scored reverse before all items were added together to obtain a total optimism score. Total scores for the LOT-R range anywhere between 0–24 and higher scores indicate greater optimism (Haskell, 2008). The total optimism score was used in the present study for statistical analysis.

Hardiness

The second personality characteristic of hardiness was measured using the Dispositional Resilience Scale-15 (DRS-15; Bartone, 2007) a revised and shortened version of the original 45-item (Bartone et al., 1989; Bartone, 1991). The DRS-15 measures the three components of hardiness: commitment, control, and challenge (Appendix J). The DRS-15 has shown good internal consistency (α = .82) for the composite hardiness score as well as the three subscales (commitment; α = .77, control; α = .68, and challenge; α = .69). A 3-week test-retest coefficient of .78 for the composite hardiness score and corresponding .78 (commitment), .58 (control), and .81 (challenge) 3-week test-retest coefficients for the three subscales also indicated high reliability of the DRS-15 (Bartone, 1999; Bartone et al., 2008). The present study supported adequate

internal consistency for all three subscales (commitment; α = .80, control; α = .74, and challenge; α = .63) as well as for the composite hardiness score (α = .75).

The DRS-15 consists of five items within each of the three subscales for a total of 15 items. Statements such as, "I feel like my life is somewhat empty of meaning" (commitment), "How things go in life depends on my own actions" (control), and "Changes in routine are interesting to me" (challenge) exist within the DRS-15. Participants were asked to check the box next to each item to indicate how much they believe each item is true. The items are scored on a 4-point Likert scale: 0 = *not at all true*, 1 = *a little true*, 2 = *quite true*, 3 = *completely true*. Six of the fifteen items were reverse scored before determining the total score for each subscale. A sum for each of the three subscales was determined for the present study, each ranging from 0 (low) to 15 (high). Higher scores indicate higher levels of hardiness in those subscales.

Resilience

Resilience was measured using the Connor-Davidson Resilience Scale-10 (CD-RISC-10; Campbell-Sills & Stein, 2007) which is a revised version of the original 25-Item Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003). After a series of modifications to the original CD-RISC, this 10-item unidimensional scale was developed, comprising items 1, 4, 6, 7, 8, 11, 14, 16, 17, and 19 from the original scale for a total of 10 items (Appendix K). The CD-RISC-10 measures participant's ability to positively adapt to adversity. The CD-RISC-10 has been reported to have good internal consistency and construct reliability with a Cronbach's α of .85 (Campbell-Sills & Stein, 2007). Cronbach's α remained consistently between .84 and .86 when used as a tool within sport as well, further supporting the internal validity of the CD-RISC-10.

Gonzalez and colleagues (2016) concluded in support with previous research (Burns & Anstey, 2010; Gucciardi et al., 2011) that the CD-RISC-10 is a valid and reliable instrument in the sport setting. The present study supported the adequacy of the CD-RISC-10 internal consistency ($\alpha = .91$).

Participants were asked to indicate how much he or she agrees with each of the 10 statements, as they applied to them over the last month, on a 5-point Likert scale: 0 = *not true at all*, 1 = *rarely true*, 2 = *sometimes true*, 3 = *often true*, 4 = *true nearly all the time*. Example items included: "I am able to adapt when changes occur", "I can deal with whatever comes my way" and "I tend to bounce back after illness, injury, or other hardships" (Gucciardi et al., 2011). The total score is determined by the sum of the participants' responses from the 10 items. Scores from the CD-RISC-10 ranges from 0 to 40, in which higher scores indicated resilience (Madewell & Ponce-Garcia, 2016).

Data Analysis

All categorical variables were expressed in counts and percentages. Continuous variables were summarized in means and standard deviations. Prior to conducting the main hierarchical regression analyses, descriptive statistics and distribution indicators were calculated and examined for normal distribution, justifying the use of parametric statistics. Skewness and kurtosis of each variable were calculated. Kline (2016) recommends skewness to be below 3 and kurtosis below 10 as a cut off. All dimension descriptives, skewness, kurtosis, and internal consistency values are shown in Table 1. Next, Pearson correlation coefficients were conducted to examine the relationships between the dimensions of resilience with the dimensions of stressors, challenge

appraisal, personality characteristics, age, and current academic year. The correlations between all dimensions can be found in Table 2.

Guided by Fletcher and Sarkar's (2012) model (Figure 3), a hierarchical regression analysis was conducted. The first block of the regression was stressors and included the scores for general life stress and sport specific stress dimensions from the CSALSS, as well as the scores from the ACEs Questionnaire. The second block added to the regression was challenge appraisal, which included the scores for the challenge and threat dimensions within the CAT-Sport Scale. The third and final block added into the regression was personality characteristics, including the optimism scores from the LOT-R and the three hardiness subscale scores (commitment, control, challenge) from the DRS-15. The outcome variable of resilience included the composite scores from the CD-RISC-10.

From the hierarchical regression analysis, the F values were determined to indicate whether or not the regression model worked. The R^2 values were found between each block to determine how much variance can be predicted from each of the predictor variables within each block. The ΔR^2 values were also determined, which accounted for the differences between each block as each block of the regression was added. Beta coefficients were identified to express how strong each of the predictor variables were within each block. Results from the hierarchical regression analysis are shown in Table 3. In addition, multicollinearity was assessed via variance inflation factors (VIF) and tolerance. According to Kline (2016) a tolerance value below .10 and a VIF value above 10 indicate problematic multicollinearity.

RESULTS

All variables were normally distributed for the use of parametric statistics. All skewness and kurtosis values were under 2 and 3, respectively. Descriptives and assessment of normality can be found in Table 1. The Pearson's correlation coefficients determined various weak to moderate correlations between the dimensions of each scale. However, there were also some strong correlations identified in the present study. A strong positive correlation was identified between the challenge variable in the CAT-Sport Scale and resilience ($r = .60$, $p < .01$). A strong positive correlation was identified between general-life stress and sport-specific stress ($r = .52$, $p < .01$) and a strong negative correlation was identified between general-life stress and the commitment subscale in the DRS-15 ($r = -.54$, $p < .01$). Lastly, there was a strong positive correlation identified between optimism and the commitment subscale in the DRS-15 ($r = .55$, $p < .01$). Age and current academic year were added into the correlation analysis to determine any additional relationships in the present study. There was a weak positive relationship between resilience and age, as well as a weak positive relationship between resilience and current academic year. The correlations between all dimensions are shown in Table 2.

For the first step in the hierarchical regression, the predictor variables associated with stressors (general life stress, sport-specific life stress, ACEs) were analyzed. The general life stress and sport-specific life stress variables were from the College Student-Athlete Life Stress Scale and the ACEs variable was from the Adverse Childhood Experiences Questionnaire. The results of the first block hierarchical regression analysis revealed to be statistically significant ($F = 3.06$, $p < .05$). In addition, the regression

model accounted for 6% of the variance of the dependent variable. Life stress was the only significant negative predictor ($\beta = -.23$, $p < .05$).

For the second block of the hierarchical regression, the predictor variables associated with challenge appraisal (challenge, threat) were added to the analysis. Both challenge and threat variables were from the Challenge and Threat in Sport Scale. The results of the second block hierarchical regression analysis revealed to be statistically significant ($F = 15.95$, $p < .01$). In addition, the second block of the regression model added 31% of the variance prediction of the dependent variable ($\Delta R^2 = .31$, $p < .01$). A total of 38% of the variance of the dependent variable was accounted for in this regression model. The variable challenge (i.e., appraising stressors as challenges) emerged as the only significant predictor in the model ($\beta = 0.57$, $p < .01$).

In the last block of the hierarchical regression, the predictor variables associated with personality characteristics of optimism and hardiness were added to the analysis. The optimism variable was from the Life Orientation Test-Revised and the three hardiness scores (commitment, control, challenge) were from the Dispositional Resilience Scale-15. The results of the third block hierarchical regression analysis revealed to be statistically significant ($F = 10.3$, $p < .01$). In addition, the third block of the regression model added 4% of prediction of the variance of the dependent variable ($\Delta R^2 = .04$, $p < .05$). A total of 42% of the variance of the dependent variable was accounted for in this regression model. The variables *challenge* ($\beta = .50$, $p < .01$) from the Challenge and Threat in Sport Scale and *commitment* ($\beta = .20$, $p < .05$) from the Dispositional Resilience Scale-15 emerged as the only significant predictors in the model. Results of all steps of the hierarchical regression analysis can be found in Table 3. VIF

values for all steps were below 10 and all tolerance values were above .10, indicating no signs of problematic multicollinearity. VIF are shown in Table 2.

DISCUSSION

The purpose of the present study was to examine the relationships between stressors, challenge appraisal, and personality characteristics (i.e., optimism, hardiness) and resilience in collegiate student-athletes. A hierarchical regression analysis revealed that the stressors, challenge appraisal, and personality characteristics examined in the present study predicted 42% of the total variance of resilience. First, it was hypothesized that there will be a prediction of stressors on resilience in collegiate student-athletes. Results indicated that general life stress specifically was the only significant predictor and was shown to negatively predict resilience in collegiate student-athletes. Second, it was hypothesized that challenge appraisal will add to the prediction of resilience in collegiate student-athletes. In line with our hypothesis, the results indicated that the challenge variable of challenge appraisal emerged as the only significant predictor of resilience in collegiate student-athletes. Lastly, it was hypothesized that personality characteristics (i.e., optimism, hardiness) will add to the prediction of resilience in collegiate student-athletes. Results indicated that the commitment variable within the personality characteristic of hardiness was the only significant predictor. Overall, 42% of the variance associated with the resilience variable was predicted by the stressors, challenge appraisal, and personality characteristics variables examined in the present study. Subscales within the scales from all three blocks in the hierarchical regression (stressors, challenge appraisal, personality characteristics) added to the prediction of

resilience, and will be discussed below in order of the strength of prediction. The predictors that did not indicate significance in the present study will also be discussed.

The variable *challenge* from the Challenge and Threat in Sport Scale was the strongest predictor in the present study and was represented within the second block in the hierarchical regression (challenge appraisal). The present study revealed a positive association between challenge appraisal and resilience in collegiate student-athletes. That is, perceiving stressors as opportunities for growth, development, and mastery serve as a predictor to positively adapting to adversity in the present study (Fletcher & Sarkar, 2012). Those who appraise stressors as challenges tend to be resilient as well. Appraising stressors as challenges includes using failures as a source of increased effort, learning and growing from mistakes made, and/or gaining a new perspective following adversity. Thus, by viewing stressors as challenges, student-athletes are better able to overcome them because they know it will not come easy. Furthermore, student-athletes understand the benefits of their failures as it leads to learning opportunities, a shift in perspective, and/or development as a student-athlete (Galli & Vealey, 2008; Fletcher & Sarkar, 2012). According to the Theory of Challenge and Threat States in Athletes (TCTSA; Jones et al., 2009), challenge tends to be provoked in individuals that report high levels of self-efficacy, high levels of perceived control, and adopt approach goals. Therefore, because the student-athletes in the current study feel more capable and in control of their actions, they are more likely to positively adapt to their stressors.

This result supports previous literature about the positive relationship between challenge appraisal and resilience. According to Galli and Vealey's (2008) Conceptual Model of Sport Resilience, participants mentioned positive outcomes despite their

stressors. Several athletes reported learning valuable lessons following their adversity, gaining a new outlook on their sport or in life, realized how important their support system is to them, growing stronger or better because of their adversities, and gained motivation to use their adverse experience(s) in a positive manner to help motivate others (Galli & Vealey, 2008). Furthermore, Fletcher and Sarkar's (2012) grounded theory approach highlighted challenge appraisal as "a pivotal factor in explaining the relationship between psychological resilience and optimal sport performance" (p. 673). Olympic champions in this study believed their stressors gave them a "psychological and competitive edge" over others and when they failed, they learned from it and increased their efforts for future competitions (Fletcher & Sarkar, 2012, p. 673).

Additional predictors investigated were personality characteristics. In particular, hardiness was examined in the present study by considering the three subscales of the DRS-15 separately; commitment, control, and challenge. The variable *commitment* from the commitment subscale of the DRS-15 was the second strongest predictor in the present study, and was represented within the third block in the hierarchical regression (personality characteristics). The present study revealed a positive association between personality characteristics and resilience in collegiate student-athletes. That is, a commitment to a purposeful existence is a predictor that contributes to student-athletes' ability to more positively adapt to adversity in the present study (Martin et al., 2015). Committed individuals may be less likely to give up, and more willing to go through what it takes to reach their accomplishments.

Results from the present study support previous research on the relationship between commitment and resilience. Hays and colleagues (2009) concluded that

increased effort and commitment assist the best athletes in the world with their performance. The present study's results suggest that student-athletes that have "the ability to feel deeply involved in or committed to the activities of their lives" (Kobasa, 1979, p. 3) deeply act on and invest themselves in what they are trying to accomplish. The more committed one is, the easier it may be for one to ignore or power through obstacles in order for that individual to reach their goal. Committed individuals are more inclined to work hard and self-discipline, which allows them to adapt positively after experiencing stressors. The findings of the present study also indicated the moderate to strong positive correlation between the commitment subscale and the control subscale. Student-athletes in the present study that were highly committed were also likely to feel in control of their responses and corresponding outcomes. This makes sense because previous research indicated that the commitment and control components of hardiness are strongly correlated (Eschleman et al., 2010). However, the variable *control* from the DRS-15 in the present study was not found to be a predictor of resilience. Lastly, the variable *commitment* from the DRS-15 and the variable *optimism* from the LOT-R were found to have a strong positive correlation. That is, student-athletes in the present study that were highly committed to the activities of their lives are also likely to be optimistic. This may also be due to the student-athlete's attitude towards their goals. High commitment is considered beneficial because it gives student-athletes "a sense of purpose and it results in the development of social relationships that can be called upon" when presented with stressors (Eschleman et al., 2010, p. 278). In addition, highly committed student-athletes are better able to scan their environments and determine the specific things that interest them and seem meaningful (Eschleman et al., 2010). Because

optimistic individuals overall expect positive outcomes and have a positive approach to situations, it makes sense that these two variables (i.e., commitment, optimism) have a positive correlation in the present study. It is possible the student-athletes that increase their efforts towards meeting their goals may also have a more optimistic outlook on the process or approach going into each situation.

Lastly, the present study examined the relationship between stressors and resilience. The variable *life stress* from the CSALSS was the only significant predictor from the stressors block. However, life stress was only a significant predictor when in the first step of the regression. In the second and third, it was not. Nonetheless, perceived life stress as a collegiate student-athlete negatively predicted resilience in the present study, with relatively weak prediction power. Therefore, student-athletes that experience greater stressors within their personal life were less likely to adapt positively. The added burdens of sports participation make college student-athletes' life stress an extremely important issue (Loughran & Etzel, 2008). General life stress includes stressors outside of participants' athletic environment, such as academic requirements (e.g., studying for an exam), romantic relationships (e.g., break up with a significant other), family relationships (e.g., grandparent becomes ill), and interpersonal relationships (e.g., being away from high school friend group; Lu et al., 2012). Added burdens of sport participation for student-athletes likely have an impact on their personal life outside of sport. For example, late night practices, early morning strength and conditioning sessions, or travel obligations for competitions take out valuable academic time from a student-athletes day compared to non-athlete counterparts. Furthermore, more time spent on sport obligations takes away from time spent in interpersonal relationships.

Previous literature indicated how prevalent general life stress is compared to sport-specific stress in collegiate student-athletes. In general, 95% of male and 86% of female collegiate student-athletes reported studying for academic factors (e.g., tests and examinations, making up class content because of traveling for athletics events) as stressors in their general life (Humphrey et al., 2000). In comparison, only 50-54% of male and 60% of female student-athletes reported their athletic demands as stressors. Additional personal stressors include developing an independent identity, adapting to greater academic demands, developing new social networks, and formulating future career paths (Carodine et al., 2001; Parham, 1993; Santrock, 2014). Student-athletes unable to adapt to increased academic demands may struggle balancing their sport with their academic commitments, increasing the stress in their lives. Student-athletes also have to be able to better manage their time, compared to their non-athlete counterparts (Carodine et al., 2001, Parham, 1993; Santrock, 2014; Humphrey et al., 2000). These individuals frequently cite studying for tests and examinations and completion of various academic work as a serious stressor due to the time and physical and mental energy their athletic commitments significantly occupy (Humphrey et al., 2000). Thus, the demands of athletics may prevent them from succeeding in the classroom compared to if they were not participating in sport. Aside from athletic and academic commitments, student-athletes also need to balance their interpersonal, romantic, and familial relationships. However, managing success and failure in all of these domains was also perceived as a stressor to many student-athletes (Humphrey et al., 2000). Additionally, Lu and colleagues (2016) concluded that high resilience is negatively associated with life stress-induced outcomes in student-athletes. Therefore, greater life stress in student-athletes

predicted low levels of resilience in student-athletes, which was confirmed by the results of the present study. Furthermore, life stress and sport stress were found in the current study to have a strong positive correlation ($r = .52$, $p < .01$). It is possible that student-athletes have both life stress and sport stress in their lives, but their sport participation alone may provide them with solid social relationships that allow them to adapt more positively to adversity. Furthermore, it is possible they perceive their sport as fun and use it as a way of coping with adversities in their lives. Future research should investigate the perceptions of stressors in collegiate student-athletes and if they use their sport as an outlet to relieve their stressors.

Other variables that have theoretically been connected to resilience were also investigated, but were not found to have significant prediction power in the present study. One of these variables is ACEs. Results of the present study concluded there was not a relationship between ACEs and resilience in collegiate student-athletes. Thus, childhood abuse, childhood neglect, and/or challenging household circumstances did not impact the participants ability to positively adapt in the present study. To date, there has not been any previous literature investigating the relationship between these two variables in collegiate student-athletes, however this insignificant result brings out some potential considerations. In previous general population research, ACEs are very common, with nearly two thirds (67%) of study participants reporting one or more ACEs, and more than one in five (20%) participants reporting three or more ACEs (Felitti et al., 1998). The participants within the present study do add some important insight about student-athletes into ACEs literature. In the present study, nearly 16% ($n = 22$) of participants reported three or more ACEs and nearly 50% ($n = 68$) of participants reported one or more ACEs,

indicating slightly lower prevalence of ACEs in student-athletes. Previous research stated that those exposed to three or four ACEs report significantly poorer overall health. In addition, those that report three or more ACEs are more likely to report low levels of life satisfaction, frequent depressive symptoms, anxiety, tobacco use, and marijuana use (Mersky et al., 2013). Such symptoms and continued exposure may result in chronic illnesses, disease, and other adult-risk behaviors lasting throughout adulthood (Felitti et al., 1998). Also important to note is that increased childhood adversity is associated with poorer physical health outcomes by the age of 24. This suggests that mental health consequences in early adulthood (i.e., college age individuals) may serve as pathways ultimately leading to long-term physical health consequences (Mersky et al., 2013). Therefore, it is possible that although there was not a significant prediction power between ACEs and resilience in the present study, these participants with three or more ACEs may still suffer from the mental and physical consequences of ACEs during and after their college years. This may be important information to consider in the care and prevention of mental health concerns for student-athletes throughout their time on campus.

In addition, over 50% (n = 70) of participants did not report any ACEs at all (i.e., an ACE score of 0). This may due to the population surveyed in the present study, in which a majority are from a higher socioeconomic status. In previous research on the prevalence of ACEs from 2011 to 2014 in 23 states, significantly higher ACE exposures were reported by participants with an annual income of less than $15,000 compared with those in other income brackets (Merrick et al., 2018). Only 2.3% (n = 3) participants in the present study reported an annual parental income of less than $19,999. Nearly 60% ($n$

= 79) of participants in the present study reported an annual family income of $100,000 or more, with the greatest number of participants reporting $140,000 or more (25%, *n* = 34). However, not all participants in the present study with ACE scores of 0 reported a high annual parent income, which suggests other variables not investigated in the present study may have an impact on the results. Results in the present study highlight that although ACE exposure is common, some individuals are at a higher risk of experiencing ACEs than others (Merrick et al., 2018; Mersky et al., 2013; Felitti et al., 1998). In the present study, all participants (*n* = 138) chose to answer each question in the ACEs questionnaire with "yes" or "no," allowing researchers to determine each participant's self-reported ACE score. However, due to the self-reported nature of this questionnaire, there is a chance participants did not answer all of the questions truthfully due to discomfort. Overall, more research investigating ACEs and resilience in larger sample sizes needs to be conducted in order to better understand its value as a predictor variable in collegiate student-athletes. The small sample size (*n* = 138) and athletic setting (i.e., Division III) in the present study does not allow for a full understanding of the relationship between ACEs and resilience in collegiate student-athletes.

Lastly, another personality characteristic investigated in the current study was optimism. The results of the present study concluded there was not a significant relationship between optimism and resilience in collegiate student-athletes. Thus, student-athletes that tend to "believe that one will generally experience good outcomes in life" (Lee et al., 2008, p. 417) did not show increased resilience in the present study. The findings for optimism do not support previous research on optimism as a predictor of resilience. Optimism has been found to predict resilience in various populations, such as

aging women (Lamond et al., 2008), medical students (Souri & Hasanirad, 2011), and burn patients (He et al., 2013). Optimism has also been found to predict facilitative responses in sport, such as emotional adjustment (Gaudreau & Blondin, 2004) and lower levels of pre-competition anxiety (Wilson et al., 2002). Furthermore, an optimistic explanatory style has been cited in a variety of research revealing those with optimistic explanatory styles are more likely to positively adapt after experiencing stressors (Coffee & Rees, 2011; Coffee et al., 2009; Martin-Krumm et al., 2003).

The results of the present study suggest the DIII population or generation of the participants in the present study may impact whether or not optimism predicts resilience. The DIII student-athletes that participated in this study are primarily participating in sport for purposes outside of the goal to play professionally. Therefore, it is possible there are times when other priorities interfere with sport participation, influencing relaxation and decreased effort. Rather than optimistic thinking promoting hope and leading to increased persistence, it may have led to relaxation and decreased effort (Gordeeva & Osin, 2011). Relaxation and a decrease in effort may result in various outcomes and interfere with the process of resilience for student-athletes, therefore not adding any significance to resilience in the present study. Generally, more research needs to be conducted in order to understand optimism as a predictor of resilience in the DIII college student-athlete population specifically.

Applied Implications

The findings of the present study have practical implications for sport psychology professionals, coaches, parents, other support staff, and student-athletes themselves. First, a significant finding in the current study is that student-athletes with greater life stress are

less resilient, which suggests implications for sport psychology professionals to provide stress-management techniques and/or programming for student-athletes (Galli & Vealey, 2008). The negative relationship between life stress and resilience highlights how common life stressors are for student-athletes and how that life stress can carry into their sport. Student-athletes face a variety of stressors compared to their non-athlete counterparts because of the added burdens from their sport participation, which make student-athletes' life stress an immensely relevant topic (Etzel, 2009; Yusko et al., 2008; Loughran & Etzel, 2008). Having resources readily and consistently accessible to student-athletes may be necessary in order to help student-athletes learn to manage their life stress outside of their sport, and ultimately have a potential impact on their ability to positively adapt.

Findings from the current study also suggest valuable practical implications for coaches. Because student-athletes interact with their coaches on a regular basis, coaches play a crucial role in promoting resilience in the student-athlete's environment both in sport and outside of sport. This suggests implications for coaches to be sources of quality social support for student-athletes going through difficult circumstances or challenges in their personal life outside of the sport environment. For example, coaches providing social support in the form of encouragement or empathy to a student-athlete working through a parental divorce may contribute to how that individual manages their negative circumstances (Galli & Vealey, 2008). It may be likely for coaches to only be aware of student-athletes' lives in their sporting environment, and are not immediately concerned with their lives outside of sport. Having a supportive environment has been found to serve as a protetive factor in resilient individuals following adversity (Rutter, 1990).

Furthermore, individuals that report having higher levels of social support appraise their competitive situations as more of a challenge and less as a threat (Freeman & Rees, 2009).

It is crucial to carefully manage a student-athletes environment in order to optimize the stressors they enounter throughout their lives (Sarkar & Fletcher, 2014). Life stress as a negative predictor of resilience determined in the present study suggests coaches can make more of an effort to eliminate stigma and be a resource for their student-athletes. Having mental health resources, referrals, and other support options available for their student-athletes can help those individuals get the help and support they may need more efficiently. Additionally, coaches have the ability to create an environment for the team in which the student-athletes appraise challenges as opportunities for personal growth and mastery, and highlight strong commitment to the sport. Being a positive role model as a coach and modeling the behaviors and communication you want to see within your team creates a more influential environment. The environment around student-athletes has been shown to be vital to the development of resilience, therefore creating an environment in which each student-athlete can thrive is essential (Sarkar & Fletcher, 2014). Creating this optimal environment for student-athletes also applies to the parents of student-athletes and additional support staff that potentially interact with student-athletes on a regular basis.

Lastly, findings from the current study suggest practical implications for the student-athletes themselves. These findings may help student-athletes identify potential challenge appraisal differences or shifts in their commitment to their sport that interfere with their ability to adapt positively to adversity (Fletcher & Sarkar, 2012). Additionally,

sport psychology professionals can work to enhance these areas for student-athletes to positively influence their resilience. Furthermore, findings from the current study suggest implications for college coach recruitment of student-athletes. Aside from athletic ability, college coaches may also consider asking the student-athlete questions about how they appraise stressors and about their commitment to the sport in order to get a better assessment of the recruit's ability to adapt positively to adversity.

Limitations

Despite the implications of the current study, some limitations should be noted. First, data collection for the current study took place during a global pandemic. The global pandemic led to many of the participants' athletic seasons to be abruptly cut short or canceled along with the second half of the spring semester of classes, which were continued remotely for the remainder of the school year. Although data collection was originally planned to be completed electronically, it is likely participation decreased as a result of the varying circumstances participants may have been in once removed from campus and the drastic increase in participants responsibilities that required internet access. Second, the study was cross-sectional, which enables researchers to understand the stability of participants' resilience over time and even across their lifespan (Heller et al., 1999; Kinard, 1998; Luthar, 2006; Walsh et al., 2010; Windle, 1999). However, there is a consensus in sport psychology literature that longitudinal research is essential in order to examine the characteristics of resilience throughout the process of managing stressors (Fletcher & Sarkar, 2012; Galli & Vealey, 2008; Gucciardi et al., 2011). Future studies could assess these predictor variables at different points in time to account for potential changes over time. Third, a sport-specific scale to measure resilience was not

used in this study because it does not exist. Although the CD-RISC-10 was determined to be a valid and reliable measurement in sport (Campbell-Sills & Stein, 2007), without a valid and reliable sport-specific scale to measure resilience in the sport context, resilience in the sport context will continue to be limited (Gucciardi et al, 2011; Sarkar & Fletcher, 2013). A few additional limitations for this study are that the data was self-reported by the student-athletes that were sent the survey via email from their coach, running the risk of social-desirability bias. Also, the results of this study may only be generalizable to NCAA collegiate student-athletes at the DIII level. Lastly, measurement fatigue is a limitation of this study, due to the length of the survey.

Future Directions

The present study suggests many avenues for future research directions. First, though the current study examined the predictability of two positive personality characteristics (i.e., optimism, hardiness) on resilience, future research could include additional personality characteristics. Additionally, it may be relevant to investigate student-athletes' perceptions of positive personality characteristics to better understand whether or not participants believe those characteristics are personally beneficial to have. Fletcher and Sarkar (2013) suggest that in order for researchers to get a better understanding of student-athlete's positive personality characteristics as protective factors, the questions participants answer should focus on aspects of their desirable cognitive tendencies. Second, Fletcher and Sarkar's (2012) grounded theory approach concluded that factors relating to motivation, confidence, focus, and perceived social support also influenced resilience in Olympic champions. Because these areas have not been examined since, it may be beneficial to identify which specific factors relating to

motivation, confidence, focus, and perceived social support predict resilience at the NCAA DIII level. Furthermore, it may be relevant to investigate how the five psychological factors identified by Fletcher and Sarkar's (2012) grounded theory influence one another or intervene in order to display resilience in student-athletes. Although appraising stressors as challenging was the more significant predictor found in the present study, accounting for 31% of the total variance of resilience, it is undetermined just how much of that variance was influenced by personality characteristics. Third, the current study concluded that of the variables considered, the challenge predictor made up a majority of the total percentage predicting resilience. Therefore, it may be relevant to conduct future research on the psychological factors of student-athletes that appraise challenges as opportunities for personal growth and mastery, compared to those that appraise challenges as threats, in order to identify differences. Lastly, a future study could assess the differences in the relationship between stressors, challenge appraisal, personality characteristics (i.e., optimism, hardiness) with resilience for both team and individual sports, or for both contact and non-contact sports.

Summary

Despite these limitations, the present study adds insight to the existing research on resilience in sport. Overall, results of the present study concluded that 42% of the variance associated with the resilience variable was predicted by the stressors, challenge appraisal, and personality characteristics variables examined. General life stress was the only significant stressors predictor. This study supports previous literature on the impact general life stress has on student-athletes compared to the stressors they encounter through participating in intercollegiate athletics. This study also confirmed the

significance of challenge appraisal as cited in Fletcher and Sarkar's (2012) grounded theory approach. Furthermore, appraising stressors as challenges was the most significant predictor, accounting for well over half of the total variance predicted in the present study. In regards to personality characteristics, the commitment subscale within hardiness was the only significant predictor and extends previous findings by looking at each subscale of hardiness individually. As such, the results of this study provide sport psychology professionals, coaches, parents, other support staff, and student-athletes themselves many avenues of information to consider as they are working with their student-athlete(s) within the athletic and/or academic environment. Future directions should aim to replicate the present findings using a larger sample and expand on the various psychological variables that contribute to student-athletes' challenge appraisal, or overall resilience altogether.

REFERENCES

Anthony, E. J. (1987). Risk, vulnerability and resilience: An overview. In E. J. Anthony & B. Kohler (Eds.), *The invulnerable child* (pp. 3–48). New York: Guildford Press.

Arnold, R. S., & Fletcher, D. (2012). A research synthesis and taxonomic classification of the organizational stressors encountered by sport performers. *Journal of Sport and Exercise Psychology, 34*, 397–429.

Bartone, P. T. (1991). Development and validation of a short hardiness measure. *Paper presented at the annual convention of the American Psychological Society. Washington DC.*

Bartone, P. T. (2007). Test-retest reliability of the Dispositional Resilience Scale-15, a brief hardiness scale. *Psychological Reports*, *101*(3), 943–944.

Bartone, P. T., Ursano, R. J., Wright, K. M., & Ingraham, L. H. (1989). The impact of a military air disaster on the health of assistance workers: A prospective study. *Journal of Nervous & Mental Disease, 177*(6)*,* 317–328.

Bartone, P. T., Roland, R. R., Picano, J. J., & Williams, T. J. (2008). Psychological hardiness predicts success in US Army Special Forces candidates*. International Journal of Selection and Assessment, 16*(1), 78–81.

Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59*(1), 20–28.

Burns, R. A., & Anstey, K. J. (2010). The Connor-Davidson Resilience Scale (CD-RISC): Testing the invariance of a unidimensional resilience measure that is independent of positive and negative affect. *Personality and Individual Differences, 48*(5), 527–531.

Campbell-Sills, L., Cohan, S. L., & Stein, M. B. (2006). Relationship of resilience to personality, coping, and psychiatric symptoms in young adults. *Behaviour Research and Therapy*, *44*(4), 585–599.

Campbell-Sills, L., & Stein, M. B. (2007). Psychometric analysis and refinement of the Connor-Davidson Resilience Scale (CD-RISC): Validation of a 10-item measure of resilience. *Journal of Traumatic Stress, 20*(6), 1019–1028.

Carodine, K., Almond, K., & Grotto, K. (2001). College student athlete success both in and out of the classroom. *New Directions for Student Services*, *2001*(93), 19–33.

Centers for Disease Control and Prevention (CDC). About behavioral risk factor surveillance system ACE data. www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/ace-brfss.html. Updated 2019. Accessed January 15, 2020.

Chyi, T., Lu, F., Wang, E. T. W., Hsu, Y., & Chang, K. (2018). Prediction of life stress on athletes' burnout: The dual role of perceived stress. *Peer Reviewed Journal, 6*, 1–14.

Coffee, P., & Rees, T. (2011). When the chips are down: Effects of attributional feedback on self- efficacy and task-performance following initial and repeated failure. *Journal of Sports Sciences, 29*(3), 235–245.

Coffee, P., Rees, T., & Haslam, A. (2009). Bouncing back from failure: The interactive impact of perceived controllability and stability on self-efficacy beliefs and future task performance. *Journal of Sports Sciences, 27*(11), 1117–1124.

Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety, 18*(2), 76–82.

Czech, D., Burke, K., Joyner, A., & Hardy, C. (2002). An exploratory investigation of optimism, pessimism and sport orientation among NCAA Division I college athletes. *International Sports Journal, 6*(2), 136–145.

Eschleman, K. J., Bowling, N. A., & Alarcon, G. M. (2010). A meta-analytic examination of hardiness. *International Journal of Stress Management, 17*(4), 277–307.

Etzel, E. F. (2009). Counseling Student Athletes: Issues and Interventions. Morgantown: Fitness Information Inc.

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Apitz, A. M., Edwards, et al. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine, 14*(4)*,* 245–258.

Fletcher, D., Hanton, S., & Mellalieu, S. D. (2006). An organizational stress review: Conceptual and theoretical issues in competitive sport. In S. Hanton, & S. D. Mellalieu (Eds.), *Literature reviews in sport psychology* (pp. 321–374). Hauppauge, NY: Nova Science.

Fletcher, D., & Sarkar, M. (2012). A grounded theory of psychological resilience in Olympic champions. *Psychology of Sport and Exercise*, *13*(5), 669–678.

Fletcher, D., & Sarkar, M. (2013). Psychological resilience: A review and critique of definitions, concepts and theory. *European Psychologist, 18*(1), 12–23.

Ford, I. W., Eklund, R. C., & Gordon, S. (2000). An examination of psychosocial variables moderating the relationship between life stress and injury time-loss among athletes of a high standard. *Journal of Sports Sciences, 18*(5)*,* 301–312.

Freeman, P., & Rees, T. (2009). How does perceived support lead to better performance? An examination of potential mechanisms. *Journal of Applied Sport Psychology, 21*(4), 429–441.

Galli, N., & Gonzalez, S. P. (2015). Psychological resilience in sport: A review of the literature and implications for research and practice. *International Journal of Sport and Exercise Psychology*, *13*(3), 243–257.

Galli, N., & Vealey, R. S. (2008). "Bouncing back" from adversity: Athletes' experiences of resilience. *The Sport Psychologist, 22*(3), 316–335.

Garmezy, N. (1991). Resiliency and vulnerability to adverse developmental outcomes associated with poverty. *American Behavioral Scientist*, *34*(4), 416–430.

Gaudreau, P. & Blondin, J. P. (2004). Differential associations of dispositional optimism and pessimism with coping, goal attainment, and emotional adjustment during sport competition. *International Journal of Stress Management, 11*(3), 245–269.

Gonzalez, S. P., Moore, E. W. G., Newton, M., & Galli, N. A. (2016). Validity and reliability of the Connor-Davidson Resilience Scale (CD-RISC) in competitive sport. *Psychology of Sport and Exercise*, *23*, 31–39.

Gordeeva T.O., & Osin E.N. (2011) Optimistic Attributional Style as a Predictor of Well-Being and Performance in Different Academic Settings. In: Brdar I. (Eds), *The Human Pursuit of Well-Being* (pp. 159–174) Springer, Dordrecht.

Goss, J. (1994). Hardiness and mood disturbances in swimmers while overtraining. *Journal of Sport and Exercise Psychology, 16*(2)*,* 135–149.

Gould, D., Jackson, S. A., & Finch, L. M. (1993). Sources of stress in national champion figure skaters. *Journal of Sport and Exercise Psychology, 15*(2), 134–159.

Gu, Q., & Day, C. (2007). Teachers' resilience: A necessary condition for effectiveness. *Teaching and Teacher Education, 23*(8), 1302–1316.

Gucciardi, D. F., Jackson, B., Coulter, T. J., & Mallett, C. J. (2011). The Connor-Davidson Resilience Scale (CD-RISC): Dimensionality and age-related measurement invariance with Australian cricketers. *Psychology of Sport and Exercise, 12*(4), 423–433.

Hanton, S., Fletcher, D., & Coughlan, G. (2005). Stress in elite sport performers: A comparative study of competitive and organizational stressors. *Journal of Sports Sciences, 23*(10), 1129–1141.

Haskell, B. C. (2008). The effects of optimism, coping strategies, and the sport team environment on college athlete adjustment (Master Thesis). Disponível na base de dados de Teses e Dissertações ProQuest (UMI Number: 1453397).

Hays, K., Thomas, O., Maynard, I., & Bawden, M. (2009). The role of confidence in world-class sport performance. *Journal of Sports Sciences, 27*(11), 1185–1199.

He, F., Cao, R., Feng, Z., Guan, H., & Peng, J. (2013) The impacts of dispositional optimism and psychological resilience on the subjective well-being of burn patients: A structural equation modelling analysis. *PLoS ONE 8*(12), 1–5.

Heller, S. S., Larrieu, J. A., D'Imperio, R., & Boris, N. W. (1999). Research on resilience to child maltreatment. *Child Abuse and Neglect, 23*(4), 321–338.

Holt, N. L., & Hogg, J. M. (2002). Perceptions of stress and coping during preparations for the 1999 women's soccer World Cup finals. *The Sport Psychologist, 16*(3), 251–271.

Horton, T. V., & Wallander, J. L. (2001). Hope and social support as resilience factors against psychological distress of mothers who care for children with chronic physical conditions. *Rehabilitation Psychology, 46*(4), 382–399.

Humphrey, J. H., Yow, D. A., & Bowden, W. W. (2000). *Stress in college athletes: Causes, consequences, coping* (pp. 35–47). Binghamton, NY: The Haworth Half-Court Press. An imprint of the Haworth Press, Inc.

James, B., & Collins, D. (1997). Self-presentational sources of competitive stress during performance. *Journal of Sport and Exercise Psychology, 19*(1), 17–35.

Jones, M., Meijen, C., McCarthy, P. J., & Sheffield, D. (2009). A theory of challenge and threat states in athletes. *International Review of Sport and Exercise Psychology, 2*(2), 161–180.

Judkins, S. K., & Rind, R. (2005). Hardiness, stress, and job satisfaction among home care nurses. *Home Health Care Management and Practice, 17*(2), 113–118.

Kinard, E. M. (1998). Methodological issues in assessing resilience in maltreated children. *Child Abuse and Neglect, 22*(7), 669–680.

Kleiman, E. M., Liu, R. T., & Riskind, J. H. (2013). Enhancing attributional style as a resiliency factor in depressogenic stress generation. *Anxiety, Stress, & Coping, 26*(4), 467–474.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). New York, NY: The Guilford Press.

Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study. *Journal of Personality and Social Psychology, 42*(1), 168–177.

Kobasa, S. C. (1979). Stressful life events, personality, and health: An inquiry into hardiness. *Journal of Personality and Social Psychology, 37*(1), 1–11.

Kelley, B. C. (1994). A model of stress and burnout in collegiate coaches: Effects of gender and time of season. *Research Quarterly for Exercise and Sport, 65*(1)*,* 48–58.

Lamond, A. J., Depp, C. A., Allison, M., Langer, R., Reichstadt, J., Moore, D. J., . . . Jeste, D. V. (2008). Measurement and predictors of resilience among community-dwelling older women. *Journal of Psychiatric Research, 43*(2), 148–154.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.

Lee, H. S., Brown, S. L., Mitchell, M. M., & Schiraldi, G. R. (2008). Correlates of resilience in the face of adversity for Korean women immigrating to the US. *Journal of Immigrant and Minority Health, 10*(5), 415–422.

Lifton, D., Seay, S., & Bushke, A. (2000). Can student hardiness serve as an indicator of likely persistence to graduation? Baseline results from a longitudinal study. *Academic Exchange Quarterly, 4*(2)*,* 73–81.

Loughran, M. J., & Etzel, E. F. (2008). Ethical practice in a diverse world: The challenges of working with differences in the psychological treatment of college student-athletes. *Athletic Insight*, 10(4).

Lu, F. J. H., Hsu, Y. W., Chan, Y. S., Cheen, J. R., & Kao, K. T. (2012). Assessing college student-athletes' life stress: Initial measurement development and validation. *Measurement in Physical Education and Exercise Science, 16*(4), 254–267.

Lu, F. J. H., Lee, W. P., Chang, Y. K., Chou, C. C., Hsu, Y. W., Lin, J. H., & Gill, D. L. (2016). Interaction of athletes' resilience and coaches' social support on the stress-burnout relationship: A conjunctive moderation perspective. *Psychology of Sport and Exercise*, *22*, 202–209.

Luther, S.S. (2006). Resilience in development: A synthesis of research across five decades. In D. Cicchetti & D. Cohen (Eds.), *Developmental psychopathology*: *Vol.3. Risk, disorder, and adaptation* (2nd ed., Vol. 3, 739–795). New York: Wiley.

Luthar, S. S. & Cicchetti, D. (2000). The construct of resilience: Implications for interventions and social policies. *Development & Psychopathology, 12*(4), 857–885.

Luthar, S. S., & Zelazo, L. B. (2003). Research on resilience: An integrative review. In S. S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp. 510–549). New York, NY: Cambridge University Press.

Maddi, S. R. (2006). Hardiness: The courage to grow from stresses. *The Journal of Positive Psychology, 1*(3)*,* 1–9.

Madewell, A. N. & Ponce-Garcia, E. (2016). Assessing resilience in emerging adulthood: The Resilience Scale (RS), Connor–Davidson Resilience Scale (CD-RISC), and Scale of Protective Factors (SPF). *Personality and Individividual Differences, 97*, 249–255.

Martin, J, J., Byrd, B., Watts, M., & Dent, M. (2015) Gritty, hardy, and resilient: Predictors of sport engagement and life satisfaction in wheelchair basketball players. *Journal of Clinical Sport Psychology, 9*(4), 345–359.

Martin-Kruum, C. P., Sarrazin, P. G., Peterson, C., & Famose, J.-P. (2003). Explanatory style and resilience after sports failure. *Personality and Individual Differences, 35*(7), 1685–1695.

McKay, J., Niven, A. G., Lavallee, D., & White, A. (2008). Sources of strain among elite UK track athletes. *The Sport Psychologist, 22*(2), 143–163.

Mellalieu, S. D., Neil, R., Hanton, S., & Fletcher, D. (2009). Competition stress in sport performers: Stressors experienced in the competition environment. *Journal of Sports Sciences, 27*(7), 729–744.

Merrick, M.T., Ford, D.C., Ports, K. A., Guinn, A. S. (2018). Prevalence of adverse childhood experiences from the 2011-2014 Behavioral Risk Factor Surveillance System in 23 States. *JAMA Pediatrics*, 172(11), 1038–1044.

Mersky, J. P., Topitzes, J., & Reynolds, A. J. (2013). Impacts of adverse childhood experiences on health, mental health, and substance use in early adulthood: A

cohort study of an urban, minority sample in the U.S. *Child abuse & neglect*, *37*(11), 917–925.

Mummery, W. K., Schofield, G., & Perry, C. (2004). Bouncing back: The role of coping style, social support and self-concept in resilience of sport performance. *Athletic Insight, 6*(3)*,* 1–18.

Neil, R., Hanton, S., Mellalieu, S. D., & Fletcher, D. (2011). Competition stress and emotions in sport performers: The role of further appraisals. *Psychology of Sport and Exercise, 12*(4), 460–470.

Nezhad, M. A. S., & Besharat, M. A. (2010). Relations of resilience and hardiness with sport achievement and mental health in a sample of athletes. *Procedia- Social and Behavioral Sciences*, *5*(2), 757–763.

Parham, W. D. (1993). The intercollegiate athlete: A 1990s profile. *The Counseling Psychologist*, *21*(3), 411–429.

Richardson, G. E., Neiger, B. L., Jensen, S., & Kumpfer, K. L. (1990). The Resiliency Model. *Health Education, 21*(6)*,* 33–39.

Rossato, C. J. L., Uphill, M. A., Swain, J., & Coleman, D. A. (2018). The development and preliminary validation of the Challenge and Threat in Sport (CAT- Sport) Scale, *International Journal of Sport and Exercise Psychology, 16*(2), 164–177.

Rutter, M. (1985). Resilience in the face of adversity: Protective factors and resistance to psychiatric disorder. *British Journal of Psychiatry, 147*(6), 598–611.

Rutter, M. (1990). Competence under stress: Risk and protective factors. In J. Rolf, A. S. Masten, D. Cicchetti, K. H. Nuechterlin, & S. Weintraub (Eds.), *Risk and*

protective factors in the development of psychopathology (pp. 181–214). New York City, NY: Cambridge University Press.

Santrock, J. (2014). Life-span development (15th Ed.). New York: McGraw-Hill.

Sarkar, M., & Fletcher, D. (2013). How should we measure psychological resilience in sport performers? *Measurement in Physical Education and Exercise Science*, *17*(4), 264–280.

Sarkar, M., & Fletcher, D. (2014). Psychological resilience in sport performers: A review of stressors and protective factors. *Journal of Sports Sciences, 32*(15), 1419–1434.

Scanlan, T. K., Stein, G. L., & Ravizza, K. (1991). An in-depth study of former elite figure skaters: III. Sources of stress. *Journal of Sport and Exercise Psychology, 13*(2), 103–120,

Scheier, M. F. & Carver, C. S. (1992) Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research, 16*(2), 201–228.

Scheier, M., Carver, C., & Bridges, M. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*(6), 1063–1078.

Sheard, M. (2009). Hardiness commitment, gender, and age differentiate university academic performance. *British Journal of Educational Psychology, 79*(1)*,* 189–204.

Sheard, M., & Golby, J. (2007). Hardiness and undergraduate study: The moderating role of commitment. *Personality and Individual Differences, 43*(3)*,* 579–588.

Souri, H. & Hasanirad, T. (2011). Relationship between resilience, optimism, and psychological well-being in students of medicine. *Procedia- Social and Behavioral Sciences, 30*, 1541–1544.

Wald, J., Taylor, S., Asmundson, G. J., Jang, K. L., & Stapleton, J. (2006). *Literature review of concepts: Psychological resiliency (No. DRDC-CR-2006-073).* Vancouver, BC: British Columbia University.

Walsh, W. A., Dawson, J., & Mattingly, M. J. (2010). How are we measuring resilience following childhood maltreatment? Is the research adequate and consistent? What is the impact on research, practice, and policy? *Trauma Violence Abuse*, *11*(1), 27–41.

Werner, E. E., & Smith, R. S. (1992). *Overcoming the odds: High risk children from birth to adulthood.* Ithaca, NY: Cornell University Press 1992.

Wilson, G. S., Raglin, J. S., & Pritchard, M. E. (2002). Optimism, pessimism, and precompetition anxiety in college athletes. *Personality and Individual Differences, 32*(5)*,* 893–902.

Windle, M. (1999). Critical conceptual and measurement issus in the study of resilience. In M. D. Glantz & J. L. Johnson (Eds.), *Resilience and development: Positive life adaptations* (pp. 161–176). New York: Kluwer Academic/Plenum Publishers.

Yusko, D. A., Buckman, J. F., White, H. R., & Pandina, R. J. (2008). Alcohol, tobacco, illicit drugs, and performance enhancers: A comparison of use by college student athletes and nonathletes. *Journal of American College Health*, *57*(3), 281–289.

RESEARCH MANUSCRIPT

TABLES

Table 1

Dimension Descriptives, Skewness, Kurtosis, and Internal Consistency

Dimension	CONNOR	Life Stress	Sport Stress	ACEs	CAT-Challenge	CAT-Threat	LOT-R	DRS-Commitment	DRS-Control	DRS-Challenge
Mean	28.6	2.09	2.22	1.07	4.77	3.43	14.1	10.1	11.6	6.67
(SD)	(6.91)	(.73)	(.79)	(1.43)	(.81)	(1.05)	(3.67)	(2.97)	(2.41)	(2.72)
Skewness	-1.12	.61	.68	1.52	-1.07	-.36	-.51	-.46	-.56	.18
Kurtosis	2.86	-.26	1.44	2.26	2.66	-.40	.66	-.40	.32	.02
Cronbach's α	.91	.85	.84	.64	.84	.89	.77	.80	.74	.63

Note. $N = 138$, Connor-Davidson Resilience Scale-10 (CONNOR), General Life Stress from the College Student-Athlete Life Stress Scale (Life Stress), Sport-Specific Life Stress from the College Student-Athlete Life Stress Scale (Sport Stress), Adverse Childhood Experiences (ACEs), Challenge (CAT-Challenge), Threat (CAT-Threat), Optimism (LOT-R), Commitment Subscale of the Dispositional Resilience Scale-15 (DRS-Commitment), Control Subscale of the Dispositional Resilience Scale-15 (DRS-Control), Challenge Subscale of the Dispositional Resilience Scale-15 (DRS-Challenge).

Table 2

Correlations Between Dimensions and Variance Inflation Factors

Dimension	VIF	1	2	3	4	5	6	7	8	9	10	11
1. CONNOR												
2. Life Stress	1.94	-.25**										
3. Sport Stress	1.52	-.16	.52**									
4. ACEs	1.14	-.07	.30**	.12								
5. CAT-Challenge	1.48	.60**	-.19*	-.13	-.09							
6. CAT-Threat	1.54	-.16*	.49**	.47**	.22**	-.12						
7. LOT-R	1.53	.21**	-.36**	-.27**	-.22**	.38**	-.29**					
8. DRS-Commitment	2.17	.43**	-.54**	-.32**	-.22**	.46**	-.39**	.55**				
9. DRS-Control	1.50	.39**	-.25**	-.06	-.09	.48**	-.08	.32**	.47**			
10. DRS-Challenge	1.12	.19*	-.25**	-.22**	.02	.09	-.25**	.05	.13	.09		
11. Age	4.94	.18*	-.12	.02	-.02	.08	-.21*	.06	.07	-.02	-.04	
12. Current Academic Year	4.90	.20*	-.14	.04	.01	.05	-.17*	.03	.05	-.03	.01	.89**

Note. * $p < .05$, ** $p < .01$.

Table 3

Results of Hierarchical Regression Analysis

Outcome Variable	Step	F	p	Predictor	β	R^2	ΔR^2
Resilience	1	3.06	.031	Life Stress	-.23*	.06	
				Sport Stress	-.04		
				ACEs	.00		
	2	15.95	<.001	Life Stress	-.13	.38	.31**
				Sport Stress	-.01		
				ACEs	.03		
				CAT-Challenge	.57**		
				CAT-Threat	-.03		
	3	10.3	<.001	Life Stress	-.05	.42	.04*
				Sport Stress	-.02		
				ACEs	.01		
				CAT-Challenge	.50**		
				CAT-Threat	-.00		
				LOT-R	-.14		
				DRS-Commitment	.20*		
				DRS-Control	.07		
				DRS-Challenge	.11		

Note. * p <.05, ** p <.01, Step 1 = Stressors, Step 2 = Challenge Appraisal, Step 3 = Personality Characteristics.

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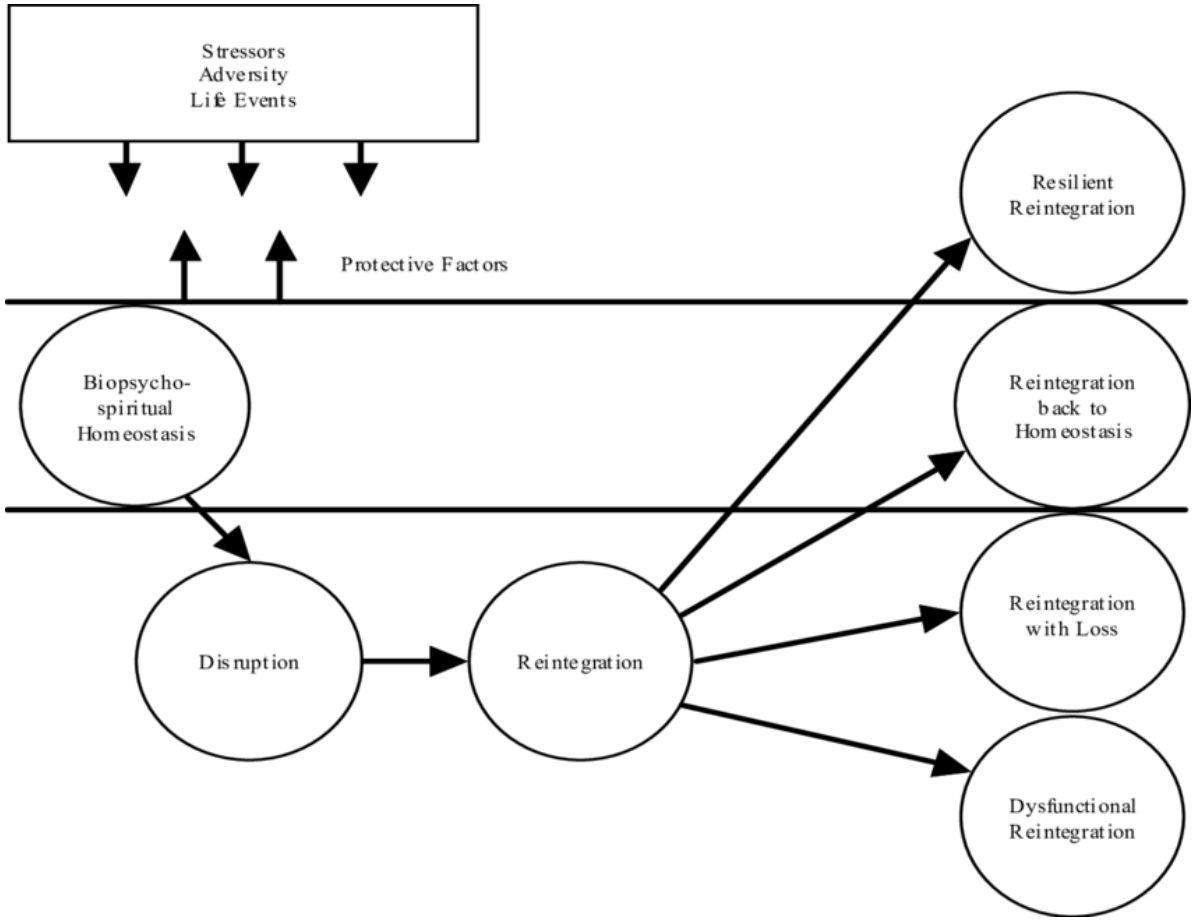
FIGURES

Figure 1

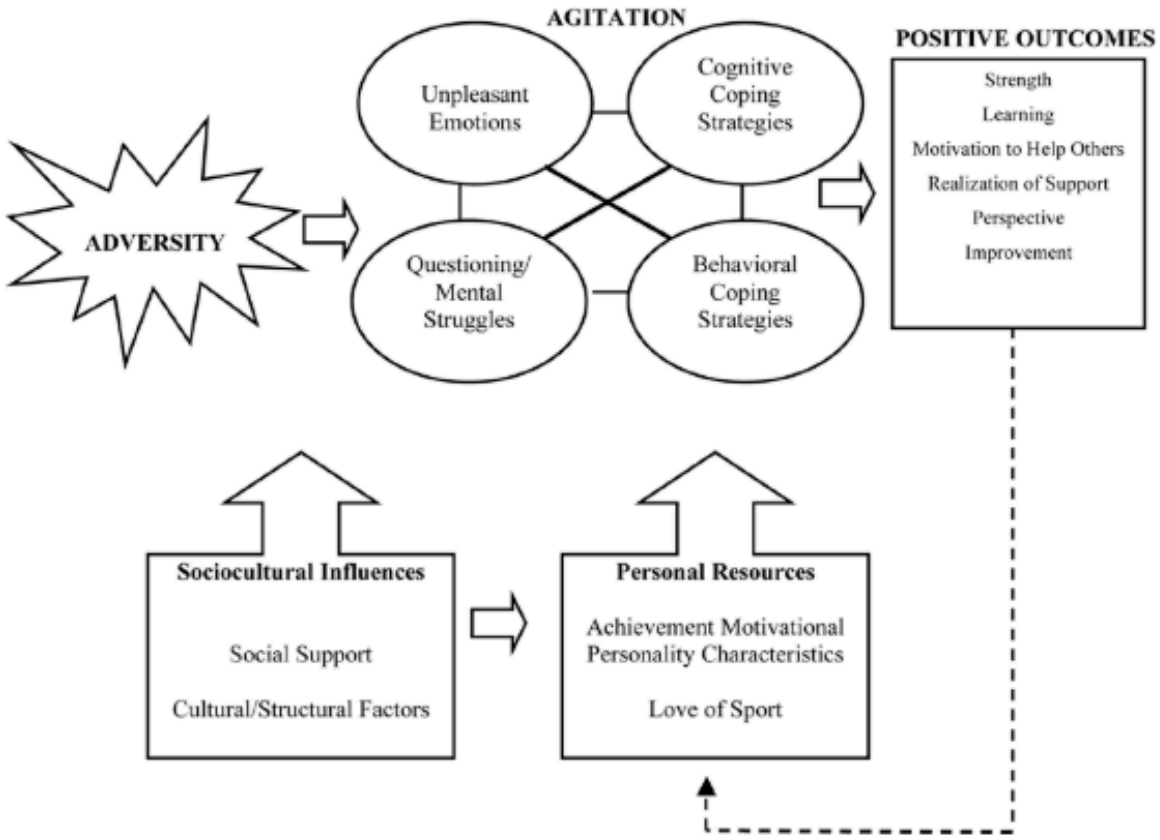
The Resiliency Model



Note. From Wald and colleagues (2006).

Figure 2

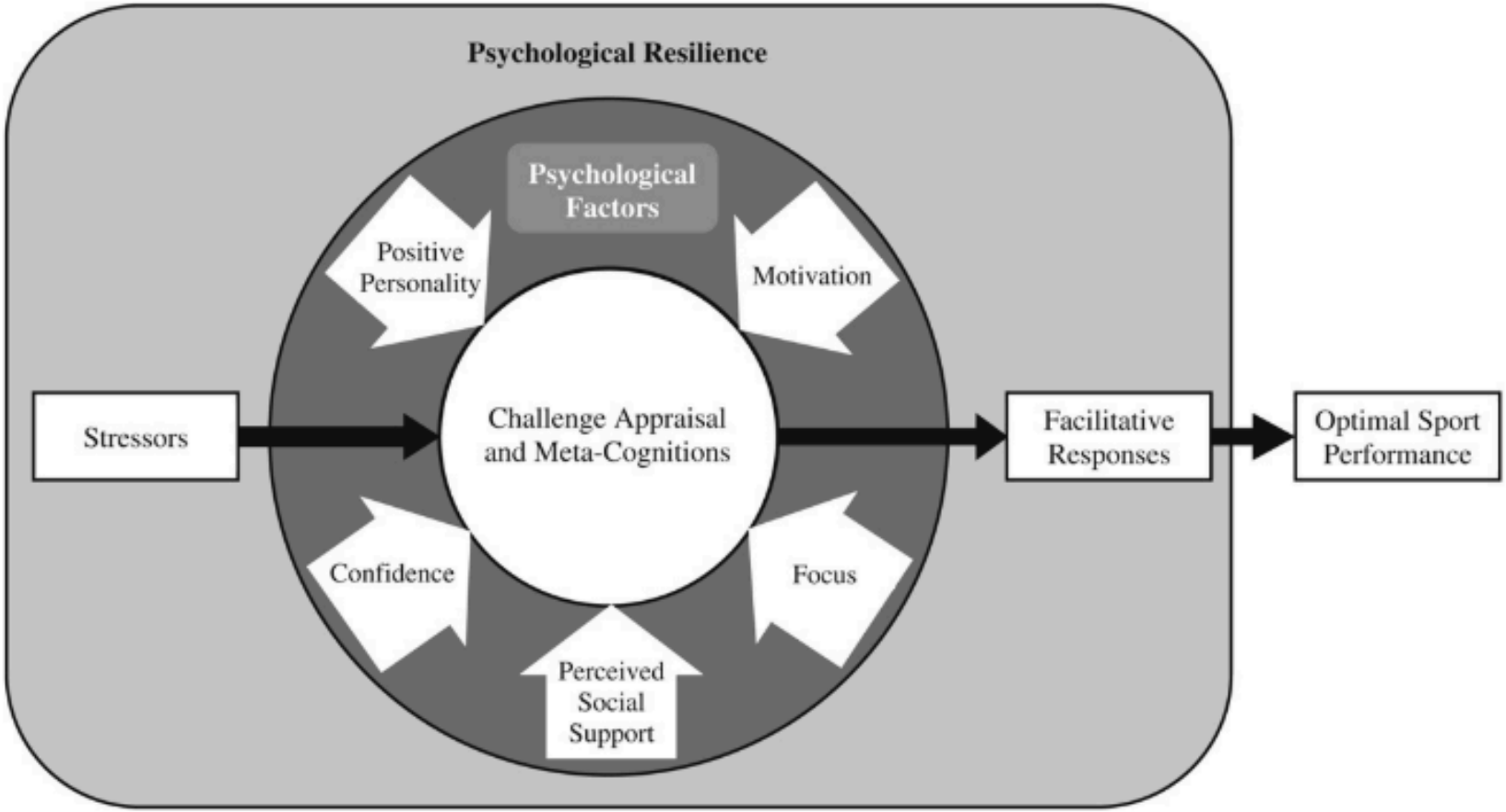
The Conceptual Model of Sport Resilience



Note. From Galli and Vealey (2008).

Figure 3

A Grounded Theory of Psychological Resilience in Olympic Champions



Note. From Fletcher and Sarkar (2012).

APPENDIX A

IMPLIED CONSENT

Title of the Study: Predictors of Resilience in Collegiate Student-Athletes

Principal Investigator: Kelly Meyer, Graduate Student at Ithaca College
Faculty Advisors: Justine Vosloo, Ph.D. CMPC, Associate Professor at Ithaca College and Sebastian Harenberg, Ph.D., Assistant Professor at Ithaca College

Invitation to Participate in a Research Study

You are invited to participate in a research study. In order to participate, you must be a DIII NCAA collegiate student-athlete and 18 years of age or older. Taking part in this research study is voluntary. You are not required to participate in this study. You may stop or withdraw your participation from this study at any time.

Important Information about this Research Study

Purpose of the study: The purpose of the current study is to assess the relationship between stressors and adverse events, challenge appraisal, and personality characteristics with resilience in collegiate student-athletes.

If you choose to participate, you will complete an anonymous online survey that was sent to you via email from your coach. You will be asked to answer demographic information and a total of 93 questions. The survey package will ask questions about adversity and stressors in collegiate student-athletes, perceptions of challenge appraisal, personality characteristics, and resilience in sport.

The total time commitment for participation is approximately 20 minutes.

Risks and discomforts associated with this research: There may be minor risk of emotional distress due to the nature of some questionnaire items associated with this study. If at any point you experience discomfort/distress completing the questionnaire, you may discontinue participation. If you find any of the issues discussed in this questionnaire to be disturbing, please contact the faculty advisor listed below or contact the Ithaca College Counseling Center (607-274-3136) on your campus for assistance.

Direct benefits to the participants: There are no direct benefits to the participants in this study.

Please read this entire form and ask questions before deciding whether you would like to participate in this research study.

IRB Approval #159

Predictors of Resilience in Collegiate Student-Athletes

1. Purpose of the Study

The purpose of the current study is learn more about the influence of previous experiences and personal characteristics on resilience in collegiate student-athletes. If you choose to participate, you will be asked to answer demographic information and a total of 93 questions electronically. The survey will ask questions about challenging childhood events, experiences as a collegiate student-athlete, perceptions of situations, characteristics, and experiences in sport.

2. Benefits of the Study

There is no direct benefit of this study to you. However, the scientific community and/or others may benefit from this research because the information gained from the study will expand on the existent knowledge of resilience in sport. In addition, the findings from this study may serve as a foundation for future research on resilience in sport. Participation in this study will benefit the researcher by supporting completion of her Master's thesis and potentially scholarly publication.

3. What You Will Be Asked to Do

Once you have consented to your participation, you will be asked to complete a series of online questionnaires to the best of your abilities. If you do not want to provide an answer for any of the questions, you should feel free to skip or leave them blank. You may withdraw from the study at any time during the duration of the allotted period for questionnaires to be completed. After completion and submission of your questionnaire, you cannot withdraw from the study anymore because data will be collected anonymously. After submission, no one (including the researcher) will be able to link your identity with the submitted questionnaire anymore. Completing the questionnaire should take you no longer than 20 minutes.

4. Withdrawal from the Study

You may withdraw from the study at any time without any consequences. After the submission of the questionnaire, withdrawal will be impossible because no one (including the researchers) will be able to link your data to your identity anymore.

5. Risks

There may be minor risk of emotional distress due to the nature of some questionnaire items associated with this study if unwanted memories arise while completing the Adverse Childhood Experiences Questionnaire. If at any point you experience discomfort/distress completing the questionnaire, you may discontinue participation. You may also skip any question that you wish not to answer. If you find any of the issues discussed in this survey to be disturbing, please contact the faculty advisor listed below or contact the Ithaca College Counseling Center (607-274-3136) for assistance.

If services are preferred off campus grounds, the SAMHSA National Helpline, Substance Abuse and Mental Health Services Administration National Helpline, also known as, the

Treatment Referral Routing Service, is an available Helpline that provides 24-hour free and confidential treatment referral and information about mental and/or substance use disorders, prevention, and recovery in English and Spanish. These services can be reached by calling 1-800-662-HELP (4357) and/or through their website: www.samhsa.gov/find-help/national-helpline.

In addition, the SAMHSA Behavioral Health Treatment Services Locator is a confidential and anonymous source of information for persons seeking treatment facilities in the United States or U.S. Territories for substance use/addiction and/or mental health problems. Treatment facilities can be found based on your location, which can be found on their website: findtreatment.samhsa.gov

6. How the Data Will be Maintained in Confidence
All electronic data will be stored on a password-protected USB stick, which will be kept in a locked filing cabinet. Because you will not provide your name, no one will be able to link the electronic data with your identity. All electronic data will be kept for 3 years after the completion of the study. Afterwards all data will be permanently deleted/destroyed.

7. Use of Information Beyond this Study
The participants' information will not be used or distributed for future research studies even if identifying information is removed.

8. If You Would Like More Information About the Study
You may ask the researcher any questions regarding the study prior to, or during the allotted time for the questionnaires to be completed. The researcher will answer any questions to the best of her ability. If questions arise after completion of the study, you will be notified to contact the researcher, or the researcher's advisors via email with any questions.

Kelly Meyer, Graduate Student
Ithaca College, Sport and Exercise Psychology
Kmeyer1@ithaca.edu

Or faculty advisors:
Justine Vosloo, Ph.D. CMPC
Associate Professor – Sport and Exercise Psychology
Department of Exercise and Sport Sciences
607-274-5190, jvosloo@ithaca.edu

Sebastian Harenberg, Ph.D.
Assistant Professor – Sport and Exercise Psychology
Department of Exercise and Sport Sciences
607-274-7780, sharenberg@ithaca.edu

IRB Approval #159

I have read the above and I understand its contents. I agree and provide IMPLIED CONSENT to participate in the study. I AGREE THAT I AM 18 YEARS OF AGE OR OLDER. PLEASE DO NOT WRITE YOUR NAME ANYWHERE ON THIS SURVEY.

You may print this page for your records. Thank you for your participation.

IRB Approval #159

APPENDIX B

DEMOGRAPHICS QUESTIONNAIRE

1. Self-Reported Gender Identity:
   - □ Male
   - □ Female
   - □ Male-to-Female Trans
   - □ Female-to-Male Trans
   - □ Non-Binary
   - □ Prefer not to say
   - □ Gender not listed here

2. Sexual Orientation:
   - □ Heterosexual
   - □ Homosexual
   - □ Bisexual
   - □ Pansexual
   - □ Prefer not to say
   - □ Sexual Orientation not listed here

3. Age: _____

4. Current Academic Year:
   - □ First Year
   - □ Sophomore
   - □ Junior
   - □ Senior
   - □ Grad

5. Parents/Guardian Income:
   - □ Less than $19,999
   - □ $20,000-$39,999
   - □ $40,000-$59,000
   - □ $60,000-$79,000
   - □ $80,000-$99,999
   - □ $100,000-$119,999
   - □ $120,000-$139,999
   - □ $140,000 +

6. Family Size (Total Parents and/or Siblings): _____

7. College Major/Area of Study: _____

8. Intercollegiate Sport: _____

9. Which part of the season is your team in?
   - Preseason
   - In-Season
   - Post-Season
   - Off-Season

10. Number of Years of Experience in (above) Intercollegiate Sport: _____

11. Other Sports Played: _____Number of Years of Experience: _____
    _____Number of Years of Experience: _____
    _____Number of Years of Experience: _____
    _____Number of Years of Experience: _____
    _____Number of Years of Experience: _____
    _____Number of Years of Experience: _____

12. For each event that you have experienced within the last year (12 months):

- Place a check under the column 0 months to 1 year to indicate that you experienced the event within the last year. Please make sure that each check corresponds to the event that has happened to you in the 1-year timeframe. Remember, only respond to those events that you have experienced within the last year. If you have not experienced an event within the last year, leave that item blank.

- Indicate what kind of an effect it had on your life when the event occurred. **A rating of -4 would indicate that the event had an extremely negative effect on you. A rating of +4 would indicate that the event had an extremely positive effect on you.** For those events that have happened more than once, indicate the *average* effect across all occurrences. The events are listed in no particular order, and there are *no* right or wrong answers. Please respond to each event honestly as applies to you.

	0 months to 1 year	**Rating**
1. Major personal injury or illness	1.	
2. Serious illness or injury of close family member(s) or friend	2.	
3. Breaking up with mate (boy/girlfriend, etc)	3.	
4. Financial problems concerning school	4.	
5. Divorce or separation of your parents	5.	

APPENDIX C

RECRUITMENT EMAIL TO ATHLETIC DIRECTORS

Hello Athletic Director—

My name is Kelly Meyer and I am currently in the second year of my graduate studies at Ithaca College studying Exercise and Sport Science with a concentration in Sport and Exercise Psychology. I am conducting a research study on the predictors of resilience in collegiate student-athletes to complete my Master's thesis.

I am emailing you requesting your permission to reach out to Ithaca College varsity sport coaches via email requesting their student-athlete's participation in my research study. Following your approval as well IRB approval, I will email coaches explaining the **important information about this research study** and request the participation of the student-athletes on their team. I will then work with the coach and their team to schedule a convenient time to meet and administer the survey package to each student-athlete in person. Completing the survey will take approximately 20 minutes. **Important information about this research study is provided below.**

Title: The Predictors of Resilience in Collegiate Student-Athletes

Purpose: The purpose of the current study is to assess the relationship between stressors and adverse events, challenge appraisal, and personality characteristics with resilience in collegiate student-athletes.

Student-Athlete Participation: Taking part in this research study is voluntary. Student-athletes are not required to participate in this study. They may stop or withdraw their participation from this study at any time. If they do choose to participate, they will meet with the researcher at a designated time and place scheduled by your coach. Participants will be asked to answer basic demographic information and a total of 93 questions in a survey package. The survey package will ask questions about adversity and stressors in collegiate student-athletes, perceptions of challenge appraisal, personality characteristics, and resilience in sport.

Risks and discomforts associated with this research: There may be minor risk associated with this study. If at any point a participant experiences discomfort completing the questionnaire, they may discontinue participation. In addition, participants may leave blank or skip any questions they do not wish to answer. Information about counseling services at the counseling center on Ithaca College's campus will be provided.

How the Data Will be Maintained in Confidence: All hard-copy questionnaires will be stored in a locked filing cabinet. All electronic data will be stored on a password-protected USB stick, which will also be kept in a locked filing cabinet. Because you will not provide your name, no one will be able to link the electronic data with your identity.

All hardcopy and electronic data will be kept for 3 years after the completion of the study. Afterwards all data will be permanently deleted/destroyed.

I would very much appreciate your approval to contact varsity coaches at Ithaca College! If you are willing and interested in allowing me to do so, please respond to this email indicating that you are aware and that you approve.

Thank you so much for your time! I look forward to hearing back from you soon.

If you have any questions, please feel free to contact me at:

Kelly Meyer, Graduate Student
Ithaca College, Sport and Exercise Psychology
Kmeyer1@ithaca.edu

Or my faculty advisors:
Justine Vosloo, Ph.D., CMPC
Associate Professor - Sport and Exercise Psychology
Department of Exercise and Sport Sciences
607-274-5190,jvosloo@ithaca.edu

Sebastian Harenberg, Ph.D.
Assistant Professor-Sport and Exercise Psychology
Department of Exercise and SportSciences
607-274-7780, sharenberg@ithaca.edu

APPENDIX D

RECRUITMENT EMAIL TO COACHES

Hello Coach,

You are receiving this email because the student-athletes on your team are eligible to participate in a research study on resilience in DIII collegiate sport. The purpose of this study is to understand the relationship between specific experiences, personal characteristics and resilience in collegiate student-athletes. Your student-athletes will be asked to complete a 20 minute anonymous online survey and it will be completely voluntary.

If you are willing and interested in allowing your student-athletes to participate in the study, please copy and paste the email I have bolded below to all of your student-athletes via email. Alternatively, I am available to meet with your team to introduce the key details about the study. To arrange a date, time, and location for me to meet with your team and to explain the survey to them, please respond to this email. The athletes may then volunteer to participate or opt out if they choose at any time. You will still be asked to forward the survey to your team for this meeting. The time commitment to complete the survey should not be more than 20 minutes, and I am more than happy to accommodate to your team's busy schedule. I really appreciate your time and thoughtful consideration!

If you have any questions, please feel free to contact me at:

Kelly Meyer, Graduate Student
Ithaca College, Sport and Exercise Psychology
Kmeyer1@ithaca.edu

Or my faculty advisors:
Justine Vosloo, Ph.D., CMPC
Associate Professor – Sport and Exercise Psychology
Department of Exercise and Sport Sciences
607-274-5190, jvosloo@ithaca.edu

Sebastian Harenberg, Ph.D.
Assistant Professor – Sport and Exercise Psychology
Department of Exercise and Sport Sciences
607-274-7780, sharenberg@ithaca.edu

This research project has received IRB Approval from Ithaca College (Approval #159)

APPENDIX E

BOLDED EMAIL FROM COACHES TO STUDENT-ATHLETES

Hello All—

Kelly Meyer, a graduate student from Ithaca College, is conducting research on the predictors of resilience in collegiate student-athletes to complete her Master's thesis. I am emailing all of you because you are 18 years of age or older and are a DIII NCAA collegiate student-athlete, meeting the requirements to participate in her study.

The study involves electronically completing an anonymous questionnaire on your computer desktop, laptop, tablet, smart phone, or other electronic device. You willbe asked to answer demographic information and various items in this questionnaire, consisting of questions about challenging childhood events, experiences as a collegiate student-athlete, perceptions of situations, characteristics, and experiences in sport. Completion of the survey should take no longer than 20 minutes.

Please click on this link to begin the survey:

https://ithaca.qualtrics.com/jfe/form/SV_26uvJgBImnIRFmR

If you have any questions, please feel free to contact her at:

Kelly Meyer, Graduate Student
Ithaca College, Sport and Exercise Psychology
Kmeyer1@ithaca.edu

Or her faculty advisors:
Justine Vosloo, Ph.D., CMPC
Associate Professor – Sport and Exercise Psychology
Department of Exercise and Sport Sciences
607-274-5190, jvosloo@ithaca.edu

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This research project has received IRB Approval from Ithaca College (Approval #159)

APPENDIX F

COLLEGE STUDENT-ATHLETE LIFE STRESS SCALE

Below are 24 statements that describe something that annoys/bothers you or makes you uncomfortable in your daily life as a college student-athlete. Please read each one carefully and circle the number that indicates how often you experience it. Your answers are absolutely confidential.

Think about yourself as a collegiate student-athlete. Throughout my daily life…	**Never**	**Rarely**	**Some-times**	**Quite Often**	**Very Often**	**Always**
1. …I am annoyed by my injury because it has still not yet fully recovered.	1	2	3	4	5	6
2. …I worry about my unstable competitive performance.	1	2	3	4	5	6
3. …I am annoyed by my disappointing relationship with my coach.	1	2	3	4	5	6
4. …I am annoyed with the training program now.	1	2	3	4	5	6
5. …I am bothered by poor social skills in handling interpersonal relationships.	1	2	3	4	5	6
6. …I am annoyed with not finding time to encounter romantic partners.	1	2	3	4	5	6
7. …I am annoyed by my parents' high expectations.	1	2	3	4	5	6
8. …I am bothered by a lack of motivation for academic learning.	1	2	3	4	5	6
9. …I worry about being frequently injured.	1	2	3	4	5	6
10. …I worry about dragging my team down.	1	2	3	4	5	6
11. …I am annoyed by my coach's preference for some teammates.	1	2	3	4	5	6
12. …I worry that my training is not beneficial to my performance.	1	2	3	4	5	6
13. …I am annoyed with being friendless.	1	2	3	4	5	6
14. …I am annoyed with being too shy to express myself when I encounter someone I love.	1	2	3	4	5	6
15. …I am bothered by difficult situations in my family.	1	2	3	4	5	6
16. …I am annoyed when preparing for exams.	1	2	3	4	5	6
17. …I am bothered by the slow recovery of my injury.	1	2	3	4	5	6
18. …I am afraid of being eliminated from competition because of poor performance.	1	2	3	4	5	6
19. …I am annoyed by my coach's bias against me.	1	2	3	4	5	6

Think about yourself as a collegiate student-athlete. Throughout my daily life…	**Never**	**Rarely**	**Some-times**	**Quite Often**	**Very Often**	**Always**
20. …I am annoyed by my training load because it is too much for me.	1	2	3	4	5	6
21. …I am annoyed by my social skills because it seems like nobody likes me.	1	2	3	4	5	6
22. …I am annoyed with not getting along with my romantic partner.	1	2	3	4	5	6
23. …I am annoyed with communicating with my family.	1	2	3	4	5	6
24. …I worry about my academic skills because I do not know how to learn efficiently.	1	2	3	4	5	6

APPENDIX G

ADVERSE CHILDHOOD EXPERIENCES QUESTIONNAIRE

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often or very often**…
   Swear at you, insult you, put you down, or humiliate you?
   Or
   Act in a way that made you afraid that you might be physically hurt?
   - ☐ Yes
   - ☐ No
   - ☐ Prefer not to answer

2. Did a parent or other adult in the household **often or very often**...
   Push, grab, slap, or throw something at you?
   Or
   Ever hit you so hard that you had marks or were injured?
   - ☐ Yes
   - ☐ No
   - ☐ Prefer not to answer

3. Did an adult or person at least 5 years older than you **ever…**
   Touch or fondle you or have you touch their body in a sexual way?
   Or
   Attempt or actually have oral, anal, or vaginal intercourse with you?
   - ☐ Yes
   - ☐ No
   - ☐ Prefer not to answer

4. Did you **often or very often** feel that …
   No one in your family loved you or thought you were important or special?
   Or
   Your family didn't look out for each other, feel close to each other, or support each other?
   - ☐ Yes
   - ☐ No
   - ☐ Prefer not to answer

5. Did you **often or very often** feel that …

You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?

Or

Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

- Yes
- No
- Prefer not to answer

6. Were your parents **ever** separated or divorced?

- Yes
- No
- Prefer not to answer

7. Was your mother or stepmother:

Often or very often pushed, grabbed, slapped, or had something thrown at her?

Or

Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something
hard?

Or

Ever repeatedly hit at least a few minutes or threatened with a gun or knife?

- Yes
- No
- Prefer not to answer

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?

- Yes
- No
- Prefer not to answer

9. Was a household member depressed or mentally ill, or did a household member attempt suicide?

- Yes
- No
- Prefer not to answer

10. Did a household member go to prison?

- Yes
- No
- Prefer not to answeR

APPENDIX H

CHALLENGE AND THREAT IN SPORT SCALE

How athletes approach competition/race may vary considerably and *THERE ARE NO RIGHT OR WRONG ANSWER*S.

The following sentences may or may not be relevant to you, but with reference to the upcoming competition/race, please select the most appropriate response *FOR YOU* in relation to each of the statements below. Please answer *ALL* statements.

	Totally Disagree	Rather Disagree	Disagree to some extent	Agree to some extent	Rather Agree	Totally Agree
1. …I am worried that I will say or do the wrong things.	1	2	3	4	5	6
2. …I am worrying about the kind of impression I will make.	1	2	3	4	5	6
3. …I am concerned that others will find fault with me.	1	2	3	4	5	6
4. …I expect that I will achieve success rather than experience failure.	1	2	3	4	5	6
5. …I am looking forward to the rewards and benefits of success.	1	2	3	4	5	6
6. …I am concerned what other people will think of me.	1	2	3	4	5	6
7. …A challenging situation motivates me to increase my efforts.	1	2	3	4	5	6
8. …I am thinking about being successful in this task rather than expecting to fail.	1	2	3	4	5	6
9. …I worry what other people will think of me, even though it wont make a difference.	1	2	3	4	5	6
10. …I am looking forward to the opportunity to test my skills and abilities.	1	2	3	4	5	6
11. …I am worrying about what other people are thinking of me.	1	2	3	4	5	6
12. …I feel like this task is a threat.	1	2	3	4	5	6

APPENDIX I

LIFE ORIENTATION TEST-REVISED

Please answer the following questions about yourself by indicating the extent of your agreement using the following scale:

[0] = strongly disagree
[1] = disagree
[2] = neutral
[3] = agree
[4] = strongly agree

Be as honest as you can throughout, and try not to let your responses to one question influence your response to other questions. There are no right or wrong answers.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. ...In uncertain times, I usually expect the best.	0	1	2	3	4
2. ...It's easy for me to relax.	0	1	2	3	4
3. ...If something can go wrong for me, it will.	0	1	2	3	4
4. ...I'm always optimistic about my future.	0	1	2	3	4
5. ...I enjoy my friends a lot.	0	1	2	3	4
6. ...It's important for me to keep busy.	0	1	2	3	4
7. ...I hardly ever expect things to go my way.	0	1	2	3	4
8. ...I don't get upset too easily.	0	1	2	3	4
9. ...I rarely count on good things happening to me.	0	1	2	3	4
10. ...Overall, I expect more good things to happen to me than bad.	0	1	2	3	4

APPENDIX J

DISPOSITIONAL RESILIENCE SCALE-15

Below are statements about life that people often feel differently about. Please answer the following questions to show how much you think each one is true. Give your own honest opinions...There are no right or wrong answers.

	Not At All True	A Little True	Quite True	Completely True
1. Most of my life gets spent doing things that are meaningful.	0	1	2	3
2. By working hard you can nearly always achieve your goals.	0	1	2	3
3. I don't like to make changes in my regular activities.	0	1	2	3
4. I feel like my life is somewhat empty of meaning.	0	1	2	3
5. Changes in routine are interesting to me.	0	1	2	3
6. How things go in my life depends on my own actions.	0	1	2	3
7. I really look forward to my daily activities.	0	1	2	3
8. I don't think there is much I can do to influence my own future.	0	1	2	3
9. I enjoy the challenge when I have to do more than one thing at a time.	0	1	2	3
10. Most days, life is really interesting and exciting for me.	0	1	2	3
11. It bothers me when my daily routine gets interrupted.	0	1	2	3
12. It is up to me to decide how the rest of my life will be.	0	1	2	3
13. Life in general is boring for me.	0	1	2	3
14. I like having a daily schedule that doesn't change very much.	0	1	2	3
15. My choices make a real difference in how things turn out in the end.	0	1	2	3

APPENDIX K

CONNOR-DAVIDSON RESILIENCE SCALE-10

Please indicate how much you agree with the following statements as they apply to you over the last month. If a particular situation has not occurred recently, answer according to how you think you would have felt.

	Not True At All	Rarely True	Sometimes True	Often True	True Nearly All The Time
1. ...I am able to adapt when changes occur.	0	1	2	3	4
2. ...I can deal with whatever comes my way.	0	1	2	3	4
3. ...I try to see the humerous side of things when I am faced with problems.	0	1	2	3	4
4. ...Having to cope with stress can make me stronger.	0	1	2	3	4
5. ...I tend to bounce back after illness, injury, or other hardships.	0	1	2	3	4
6. ...I believe I can achieve my goals, even if there are obstacles.	0	1	2	3	4
7. ...Under pressure, I stay focused and think clearly.	0	1	2	3	4
8. ...I am not easily discouraged by failure.	0	1	2	3	4
9. ...I think of myself as a strong person when dealing with life's challenges and difficulties.	0	1	2	3	4
10. ...I am able to handle unpleasant or painful feelings like sadness, fear, and anger.	0	1	2	3	4